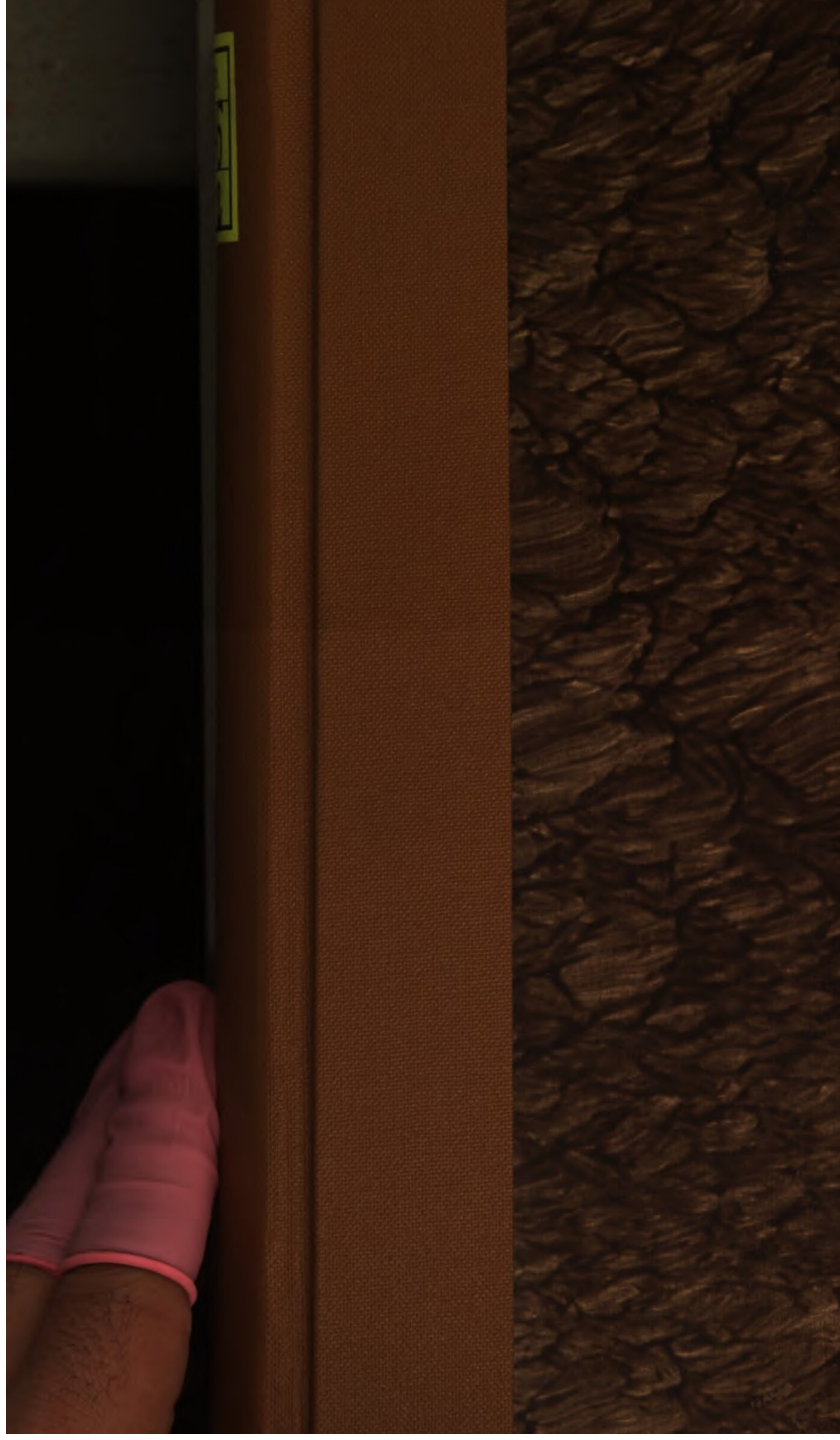




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AN
E S S A Y
ON THE
MALIGNANT PESTILENTIAL FEVER,
INTRODUCED INTO
THE WEST INDIAN ISLANDS
FROM BOULLAM, ON THE COAST OF GUINEA,
AS IT APPEARED IN
1793, 1794, 1795, *and* 1796.

Interspersed with Observations and Facts, tending to prove that
the Epidemic existing at Philadelphia, New-York, &c.
was the same Fever introduced by Infection
imported from the West India Islands :
And illustrated by Evidences founded on the State of those Islands,
and the Information of the most eminent Practitioners
residing on them.

BY C. CHISHOLM, M. D.
AND INSPECTOR GENERAL OF THE ORDNANCE MEDICAL
DEPARTMENT IN THE WEST INDIES.

THE SECOND EDITION, MUCH ENLARGED.

Argento melius perfolvunt omnia vivo
Par major: miranda etenim vis infita in illo est :
Sive quod id natum est subito frigusque caloremque
Excipere unde in se nostrum cito contrahit ignem,
Quodque est condensum, humores dissolvit, agitque
Fortius, ut candens ferrum flammâ acrius urit
Sive cres unde, id constat compagine mirâ,
Particulæ nexuque suo vinclisque solutæ
Introrsum ut potueret eorsum in corpora ferri)
Collequant concreta, et semina pestis irruiant. --- *Fracaflorii Syphilis.*

Quod me in hac re usus atque experientia docuit, palam eloqui, ac etiam propugnare
non verebor
Sydenham.

VOL. II.

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1801.

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AN
ESSAY
ON THE
MALIGNANT
PESTILENTIAL FEVER,
&c. &c.

PART III.

Means of Prevention.

IT may be expected, from the opportunities I have had, not only of seeing the malignant pestilential fever in all its various degrees of violence, but also of investigating the causes which might produce and promote it; that useful information may be the result of my observations with respect to the means of prevention. The importance of an enquiry of this nature is manifest, and, perhaps, in the torrid zone, of more than in any other; because in it the agency of cold can never interpose to prevent the ravages of a pestilential disease; and seldom is there observed that degree of heat which destroys pestilential infection in the warmer regions of the old

continent. Some late travellers observing more accurately, or possessing means more adequate to the investigation of truth than their predecessors, have thrown much light on the causes and source of pestilence. The Baron de Tott, who, we have reason to believe, had the best means of information, says, that the plague would be unknown in Egypt, were it not for the contagion which is introduced by the trading vessels from Constantinople; that it is in Alexandria it first manifests itself; that it rarely reaches Cairo, although no precautions are used to prevent it: “où les chaleurs la font bientôt cesser, et l'empêchent de pénétrer jusqu'à dans le Saïde.”*

M. Savary,

* Mémoires du Baron de Tott, sur les Turcs et les Tartares, tom. iv. p. 57, &c. Could we satisfy ourselves with respect to the fidelity of the representation given in the intercepted letters from the desperate and ferocious, but devoted French adventurers in Egypt, to their friends in France, we shall probably stagger in our belief of the plague always originating in Constantinople and Smyrna. Alexandria is thus depicted by one of the most credible of these modern Saracens. “Figurez-vous un être impassible, prenant tous les événemens comme ils viennent, qui rien n'étonne, qui, la pipe à la bouche, n'a d'autre occupation que d'être sur son cul, devant sa port, sur un banc, ou devant la maison d'un grand; passe ainsi sa journée, se souciant fort peu de sa famille, de ses enfans: des mères qui errent la figure couverte d'un haillon noir; et offrent aux passans à leur vendre leurs enfans; des hommes à moitié nus, dont le corps ressemble au bronze, la peau dégoûtante, fouillant dans des ruisseaux bourbeux, et qui, semblables à des cochons, rongent et dévorent ce qu'ils y trouvent; des maisons hautes de vingt pieds au plus,

M. Savary, who resided a considerable time in Egypt, observes, in his 44th letter, that Smyrna and Constantinople are the foci of this frightful malady ; from whence it is always imported into Egypt, which, otherwise, would be exempt from it. He adds “ another remark deserving our particular attention, is, that the extremes of heat and cold are alike enemies to this terrible contagion. The winter puts an end to it at Constantinople ; the summer destroys it in Egypt.” The fatal experience of multitudes has detected the fallacy of this writer’s concluding observation. “ It scarcely ever reaches the polar circle, and *and never passes the tropic.*” In confirmation of the general tenor of these remarks, I may refer to Dr. Russel’s excellent work on the plague, and to the 9th chapter of the first part of this work. The original causes of plague, and all its modifications, are unquestionably putrid animal effluvia. All writers agree in this ; and

plus, dont le toit est une plate-forme, l’intérieur une écurie, l’extérieure l’aspect de quatre murailles. Voilà les maisons d’Alexandrie.”—Of Cairo, he says, “ Sa forme est une grand boyeau rempli de maisons entassées les unes sur les autres, sans ordre, sans distribution, sans methode, une populace semblable à celle d’Alexandrie, sans connoissances, enfin le comble de l’ignorance.” See copies of original Letters from the Army of General Bonaparte, in Egypt, &c. vol. i. No. 22, p. 143.

the observations of Dr. Guthrie, Dr. Russel, and others, and the ingenious and scientific speculations of Dr. Mitchell, have thrown much light on the manner in which these causes act to produce so dreadful an effect. The Baron de Tott has given the public a most important observation with respect to the manner in which the plague is propagated at Constantinople: “ Quoiqu’il en soit il n’y a point d’incertitude sur le foyer qui la conserve, ni sur les causes que la propagent. On retrouve l’un et l’autre chez les marchands fripiers de Constantinople, et chez les particuliers qui conservent dans leurs coffres tous les vêtements, les fouroures même des personnes mortes de la peste. C’est sans doute prendre le moyen le plus efficace pour en fomenter et en perpétuer le germe,” &c. This observation was fully illustrated by the conduct of individuals in the lower class of the inhabitants of St. George’s, Grenada. Many of these derive their subsistence from retailing rum of the cheapest and worst quality to sailors, soldiers, and sailor and porter negroes; and as the detection of this practice, which is not permitted by law, might be destructive to their views, and ruinous to their little capitals, they carry it on in booths, and small wooden buildings of little value, erected near the wharfs,

or under the shelter of large houses, or in lanes and places out of public notice: to these, persons of the description I have mentioned are encouraged to resort, where they soon become intoxicated, and are crowded together in a hot, putrid, or infected atmosphere, till they recover their senses; when they generally find themselves precipitated into a fever of a most malignant character. Into these sinks of pestilence and destructive dissipation, captains of vessels, during the prevalence of the malignant pestilential fever, induced by the apparent cheapness of the accommodation, hurried their wretched sailors labouring under the disease in its worst form. The moment they entered them, their fate was generally decided, since the best digested plan of cure, and the most appropriate remedies, could not overcome a disease whose violence was continually accumulating by the surrounding infection. But the evil did not cease with their lives; their mattresses, blankets, and wearing apparel, wretched as they were, became an object of value in the eyes of these insidious plunderers; and whether they were hoarded up in these places, or disposed of to others, still, being preserved, they became the seminum of the disease, and were the principal means of propagating it. Another cause

contributed not a little to support the contagion : from the indolence peculiar to all classes of people in a hot climate, and from the novelty of the thing itself, few paid the necessary attention to sweetening and ventilating the rooms of the sick when the disease ceased ; from this it frequently happened, that a healthy person, on entering any of these infected rooms, was instantly struck with the infection.* These facts demonstrate, that means are always in the power of the inhabitants of the torrid zone to check or prevent contagion. That the disease, therefore, might have been prevented, in the first instance, and that the propagation of it afterwards might have been confined to those places which first received the infection, is certain, had the nature of it been properly understood, and had laws which oblige the observance of quarantine been in existence. But much, very much, depends on individual prudence, as well as public policy ; and it is to be feared, that plans of prevention, however well adapted they may be to the local situation, and other circumstances of the case, will always prove abortive in the West India colonies, from a constitutional

* A similar inattention probably renewed the disease in Philadelphia, in the year 1794. See Cary's Account of the Malignant Fever, 4th edit. p. 40, note *, and p. 61.

want of energy in the executive government ; from something like deficiency in the public spirit of individuals ; and because as Mitio, in the play, observes,

“ *Homine imperito nunquam quidquam injustius ;
Qui, nisi quod ipse facit, nil rectum putat.*”*

The means of prevention as far as this relates to local circumstances, may certainly be considered as in our power, and require only the support of authority ; and the auxiliary aid, which an impression of this truth may procure from the friends of humanity and philosophy, to give them efficacy. I propose, therefore, in the following chapters, to consider what these means are. There is an object, however, connected with these, of the highest importance to a commercial country, which, although much attended to, seems hitherto to have obtained but a small share of elucidation. I mean, the assimilation of the European constitution to the climate of the torrid zone ; and its preparation to meet, with impunity, or at least with diminished danger, the seeds of contagion, which may require only the introduction of unassimilated bodies to

* *Terentii Adelphi*, a. i, f. 2.

give them vegetation and vigour. I shall, therefore, allot a chapter to the subject, and throw together such observations as have occurred to me on it. This will be found of the greater importance, as the preparation of the unassimilated constitution, relates to all fevers of violent action, whether they originate in putrid human effluvia, or marsh miasmata.

CHAPTER. I.

Means of Prevention depending on Public Policy.

A GENERAL plan of prevention has, in the West India colonies, particularly Grenada, for its objects, the destruction of all small wooden buildings, erected purposely for the accommodation of the lowest class of white people, and free people of colour; who, renting them with no other view than to retail rum of the worst quality, and to harbour poor transient persons, in order to despoil them of their scanty property, become the greatest nuisance in West India towns, and literally the pest of society. The obliging the inhabitants to build with stone, or brick, and to lay out the plan of their buildings in such a manner, that the streets may be spacious, and subject to the perflation of the prevailing winds; the rooms as large as the general dimensions of the house will permit; stables, necessaries, and all other erections of that kind, at a distance from the dwelling house, not less than twenty feet; certain places built at individual or public expence,

pence, to which all filth shall be, early in the morning, carried; and from which, at stated times, proper persons, paid by the public, shall convey it to a distance from town. The obliging butchers to slaughter in places so far distant from town, and so situated, as not to affect the atmosphere with the offensive fœtor proceeding from putrid offals or meat; and proper sheds or stalls well ventilated, and as near running water as possible, to be built at the expence of the public, to which butchers, and all others who slaughter meat for sale, shall be obliged to carry their meat at certain stated hours, which, for obvious reasons, should be as early in the morning as possible. The appropriating a certain portion of ground for the burying of the dead, at some distance from the town, and to enclose it with a stone wall. It is astonishing the indecency, as well as inhumanity, and danger of this most shameful neglect, should not have occurred to the legislatures of the different colonies. It almost universally prevails in the British colonies; but in those of other European nations it is seldom permitted. In the Swedish Island, St. Bartholomew, this want of attention to the deceased is singularly remarkable, and would be unpardonable, were not the scarcity of soil equally remarkable.

markable.* The enacting of a law which shall involve in it the foregoing objects : and, together with these, shall regulate the retail of rum, and prohibit it, except under certain limitations ; shall appoint proper persons, with suitable salaries, to be denominated officers of health ; whose duties shall be, to prevent the erection of buildings of the description mentioned ; to regulate the licensed rum stores ; to superintend the general regulations relative to cleanliness, ventilation of streets and houses, butcher's stalls, slaughter-houses, and burying grounds ; to prevent landing and lodging of any infected person or thing, or any person or thing suspected of being so ; to visit all ships which shall carry on trade with the colony, to ascertain their health, or the existence of a contagious disease on board ; if the former,

* The following is the state of the burying-place in the neighbourhood of the carenage of St. Bartholomew, as I find it noted in my journal. " On the ridge to the S. E. which I walked, or rather scrambled over, is the burying-ground. Here the soil is so thin, as not to be sufficient to cover the dead. A grave is never deeper than a foot, or a foot and a half, and chiefly hewn or cut, by means of pick-axes, into the rock ; and stones piled up loosely make up the deficiency. I saw several inclosures made of fragments of rock, circular, and from six to ten feet diameter, in which half consumed bodies, or bones with the muscular flesh still adhering to them, are collected and exposed to the weather. So singular and so shocking a sight I have seldom met with. The number of skulls thus collected, or heaped, is immense, so that the mortality must be great notwithstanding the dryness of the atmosphere." August 18, 1797.

to

to permit them to enter the port, and land their cargoes ; if the latter, to oblige them to retire to a place appointed for the performance of quarantine.

Proper places for the purpose of performing quarantine, must be chosen, on which lazarettoes, or pest-houses, and stores and sheds should be erected, in which the crews, passengers, and cargoes, should be lodged and purified by the means so copiously treated of by Dr. Mead, Dr. Lind, and Dr. Ruffel. It is of the utmost importance to ascertain the time during which the infection of a contagious disease, such as pestilence, or pestilential fever, may continue attached to the persons of men, their clothes, their bedding, or the cargoes of vessels, without discovering itself. From my own observations, necessarily limited, I believe infection very early discovers itself; but Dr. Ruffel, who had most extensive experience, is inclined to think, from the observations he made at Aleppo, that the infection of the plague rarely remains inactive or latent beyond ten days; but that the clothes, and other packed baggage, of passengers, who, after a voyage from places infected, enter found into the lazaretto, are more to be dreaded than their persons.* The police

* Treatise on the Plague, book 3, chap. vii. p. 303.

cannot err in this respect, if the time is extended to fourteen days. Therefore after the crews, passengers, and cargoes, have remained in the places chosen for the purpose, fourteen days, the officers of health should grant them a certificate or health ticket, on which the vessel should be permitted to enter the harbour and land their cargoes. Authority should be vested in the officers of health, subject, however, in certain cases, to the controul of magistrates or justices of peace, to fine, or inflict such other punishment as delinquents, in any of the cases specified, shall be deemed deserving of. And, in order to give more efficacy to these regulations, perhaps it would be a wise measure in the legislature, if they are constitutionally competent to it, to enlarge the powers of the governor in such a manner as may enable him to act with energy on such occasions as these, and prevent the repetition of delinquency, by inflicting punishment in a more summary way than he can at present. The obtaining these improvements in the police of West India towns, and the enforcing obedience to these regulations, must altogether depend on the public; and it is to be presumed, that the great importance of their object will be a powerful stimulus to the legislative bodies in enacting, with
all

all due speed, the necessary laws for the effectual establishment of them.

I may here take occasion to remark the wisdom and sound policy which dictated the regulations instituted by the Senate and Assembly of New York, for the purpose of preventing the introduction and propagation of infectious and pestilential diseases. They constitute a model whereby similar regulations may be drawn up; and it will be no derogation from the judgment and ability of West India legislatures to adopt it. The acts for these salutary purposes passed the 1st April, 1796, and 10th February, 1797, are more especially deserving attention.*

* See "the case of the manufacturers of soap and candles in the city of New York, stated and examined, &c. published by the association of tallow-chandlers and soap-makers." The advocate employed on this occasion was Dr. Mitchell, the ingenious and learned professor of chemistry, in Columbia College; and the scientific knowledge, the general erudition, the good sense, and the elegant language displayed in the course of his argument, in support of his clients, must secure the admiration and applause of those who read his "Remarks on the Proceedings of the Legislature of the State of New York;" and his "application of the *Mitchellian Doctrine* of septic fluids, to the processes carried on in several branches of handicraft business, particularly the making of soap and candles," &c. Without a hyperbole, he may "be considered," to use his own language, "as having caught nature in her workshop, examined her collection of raw materials, and discovered which of them she employed in this fearful manufacture, (the acid of putrefaction or infection), which, like the poisoned shirt of Hercules, enwraps the wearer too closely to be shaken off." p. 33.

Not-

Notwithstanding the evident necessity existing for the adoption of a plan such as that I have proposed for the prevention of infection, and the destruction of it when it appears on ship-board, it is probable that the causes I have mentioned may always render the measure abortive. If, therefore, no proper places are chosen for the purpose of performing quarantine, and no lazarettoes are built, some other temporary expedient must be thought of in an emergency so pregnant with mischief. At the time the malignant pestilential fever began to rage on ship-board, and before it was communicated to the inhabitants, several expedients were proposed to stop its progress; but none were put in execution. Among these, I suggested to many of the captains, and some of the principal inhabitants, the following. The carenage, or harbour of St. George, is situated at the bottom of a very extensive bay, and so completely surrounded, as to be perfectly secured against every wind, except the S. W. which seldom blows. The opening into this fine basin is on the S. W., and is formed by two rocky promontories, on one of which Fort St. George stands; the other is private property, but perfectly barren, and so situated with respect to the inhabited part of the neighbouring country, as to be in a manner insulated. On this I proposed to
have

have tents, formed of sails and spars, pitched, in which the sick from the different ships were to be lodged; temporary cooking places and privies were to be erected in the rear of the encampment; and proper nurses, and careful sensible negroes, as labourers, were to be employed. After landing and lodging the sick, such ships as had no part of their cargoes on board were to put in practice all the usual means of destroying infection; and others were to do the same thing after re-landing the sugar, and other produce, particularly cotton, they had taken on board. To prevent the spreading of infection from this encampment, centinels were to be posted in such a manner as would effectually prevent stragglers from or to it. It certainly requires no more than the simple description of the plan to demonstrate its utility; and, sure I am, had it been adopted, all the subsequent mortality, and scenes of distress, at Grenada, and wherever the pestilence afterwards appeared, might have been altogether prevented. But those who could have sanctioned and given efficacy to such a plan of prevention, seemed to precipitate destruction, and to brave the wrath of heaven by incredulity.

Ibimus in pœnas, et qua vocat ira, seqemur.

SECTION

CHAPTER II.

Means of Prevention depending on individual Precaution.

THE means of prevention, which more immediately depend on the prudence and exertion of individuals, have been so often and so ably stated by writers on this subject, as, in a great measure, to render it unnecessary for me to enlarge on them here. When an individual of a family has been seized with a contagious or pestilential fever, care should be taken to prevent all, but those who are necessary in attending him, from going into the room in which he is confined; if he recovers, the bed-clothes and wearing apparel, which he used during his illness, should be as soon as possible destroyed by fire; his person well washed, and dressed with clothes that cannot be subject to suspicion; he should be carried into the country, if possible, and remain in it till he acquires his usual degree of strength: the room he lay in should be new painted, if wainscoted, or white-washed, if other

wife ; and the floor and ceiling, doors, window-shutters, &c. should be well scrubbed, and the whole afterwards fumigated. In cases such as this, it will be a wise measure, although attended with some additional trouble, to oblige the physician, and other medical attendants, to quit the coat they usually wear, before they enter the sick chamber, and to use one prepared for the purpose whilst they remain within the radius of infection. On leaving the chamber they resume their coat. Infinite mischief may thus be prevented. The nurses, and other attendants, before they again mix in society, should be obliged to purify their persons, and change their clothes. When the disease appears on shipboard, the sick should be instantly separated from the healthy, and carried to a place on shore, from which the infection cannot spread ; the space between decks, the hold, the cabin, should be immediately well scrubbed, and, if it can be done, white-washed ; fires should be lit in the hold and between decks, and whilst they are burning, the hatches should be kept close shut ; and the whole, for several days, should be carefully fumigated and sprinkled with vinegar. But, as the hammocks and mattresses of seamen are more subject to receive and retain infection, than almost any thing else on board,

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the greatest care should be taken to wash them well ; and to burn those used by the sick. Many remarkable instances have occurred to me of the efficacy of these means of prevention on ship-board, when the infection has not been imported in the ship, but adventitiously received, after her arrival in port ; and many have also been witnessed of the dreadful consequences of neglecting them. I shall mention an instance of each, in order to illustrate what I have stated. The ship *Tarleton*, of Liverpool, of 26 guns, and 70 or 80 men, arrived at the port of St. George, Grenada, on the 19th of May, 1793. The crew were young men, chiefly, and all were in the full enjoyment of health. Soon after their arrival, no care having been taken to prevent a communication with infected places, the infection of the malignant pestilential fever was received on board. No means whatever were taken to extirpate, or even check the progress of the infection, consequently it spread with unrestrained fury, and acquiring strength as it proceeded, and became concentrated, almost the whole crew perished before the month of August. Such was the fatal consequence of incredulity founded on obstinacy and ignorance. In the month of February, 1794, the ship *Mary*, of Liverpool, of the same strength

of guns and men, received the infection, in the same port, either from an American vessel, the crew of which had been infected at Martinico, or from the rum-shops I have already described. I advised the captain to separate the sick from the healthy, and, if possible, to send them on shore; and afterwards to wash all the decks with vinegar, to light fires between decks, and in the hold, and to fumigate the whole with moistened gunpowder. He complied with my directions, and the result was most happy; for, after the four in whom the disease appeared were sent on shore, and the means of prevention I have mentioned, were used, the disease entirely ceased to spread.

I may observe here, that some of the methods recommended in Europe for preventing the spreading of a contagious disease, are not always necessary, the climate itself, in some circumstances, doing what in Europe, particularly in Great Britain, must be done by artificial means. I shall only mention two instances. It is by no means necessary, or rather it is augmenting the virulence of the contagion, to shut up families in their houses, when an individual of it has been seized with the disease. I have already observed, that the sphere of infectious atmosphere, in the climate of the torrid zone, has, in no instance, exceeded

exceeded ten feet ; and that all beyond that have remained untainted. It therefore is evident, that a measure of this kind would not only be unnecessary, but extremely hurtful : for confined air, in a hot climate, becomes, in a very short time, totally unfit for respiration, however large the rooms may be ; a proof of which is the oppression, and other uneasy symptoms a person is sensible of in a room, the doors and windows of which are close shut. For the same reason, what has been proposed by Dr. Lind, if executed in the West India climate, would produce an effect in every respect the reverse of that which that ingenious and experienced physician expected from it. His proposal is, that “ the dispersed sick should be carefully collected into one place, and the houses to be purified on their removal : as others are taken ill, they should also be immediately put with the sick, and, in a short time, the infection will be wholly confined to one spot.*” In a climate whose temperature generally varies little, any thing like crowding patients, labouring under the action of pestilential contagion, must appear, *prima faciê*, in the highest degree improper. It is, therefore, the

* Dr. Lind's Essays, p. 350.

reason why hospitals in warm climates, unless they have been constructed on a very large scale, have always been hurtful. On every account, separate rooms are better, were they even huts, providing due care is taken to ventilate them properly, and keep them clean. A striking illustration of this, is, what happened in the royal artillery hospital, of Grenada, already related.

CHAP. III.

Medical Preservatives.

NO medical preservatives can be useful unless one general caution is observed. Those whose business or duty lead them to the chambers of the sick, should be particularly careful to avoid entering them with an empty stomach ; or when they are heated ; or when they are in perspiration. The last caution is more particularly to be attended to, as the pores of the skin in that state, may be considered as so many open mouths ready to receive and swallow the infectious effluvia, which no possible means can prevent.* For the same reason it is evident, that approach-

* Dr. Currie remarks, that " if the non-absorption of the surface of the body be established ; it will ascertain, that contagion is received into the system, in the ordinary course of things, by the lungs only." Med. Reports, &c. p. 272. Should this be the case, the precaution recommended in the text would be, of course, unnecessary. I have made no experiments to ascertain that contagious effluvia may be absorbed by the skin ; but several facts have occurred which seem to manifest the possibility of such an event ; and, therefore, as it is easily observed, it is a precaution which should not be neglected.

ing the sick when heated by wine, or when the system has been irritated by other irregularities, must be extremely dangerous by rendering the introduction of infection more certain.

Under the description of medical preservatives, may be considered, 1st, the various modes of fumigating; 2d, white-washing; 3d, ventilation; 4th, insperision; 5th, the burning of aromatic substances; 6th, the use of such substances, as, possessing a greater attraction of the basis of contagious effluvia, may prevent their diffusion in the atmosphere of the sick chamber; and 7thly, the use of such others as diffuse a strong, grateful, and perhaps counteracting odour. If, as we have supposed, the basis of contagion or infectious effluvia, is a chemical combination of azote and oxygene, it must be manifest that nothing can preserve the person exposed to it, from its influence, but such means as destroy the combination, and absorb or attract the superfluous azote. Every process, therefore, proceeded on with this view, must be successful in proportion to the judicious selection of means; and it is probably owing to not adverting to, or not knowing this circumstance, that almost all attempts hitherto made to destroy infection have proved inefficacious. There are two ways of destroying the basis of contagion, by increasing the volume of
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vital air, and by absorbing the poisonous effluvia; and the seven modes of preservation mentioned, produce one or other of these effects in a greater or less degree. The 1st, 3d, 5th, and 7th, seem to produce the augmentation of the volume of vital air exclusively; the 2d and 6th are alone effectual in attracting and absorbing the morbid effluvia; and the 4th may perform a double office, at least there are fluids which, when much divided, readily impart their oxygene; and there are others, which appear to attract and absorb the basis of contagion.

1st, It is unnecessary to mention the various modes of fumigation. Those I had recourse to at Grenada I have already stated, and I have much reason to conclude from their effect, that their utility was considerable. The fumigating lamps constructed by Mr. Moser, although so highly spoken of, are certainly weak agents; many trials were made of them, but I am confident, in no one instance with the expected success: the insersion of vinegar is infinitely preferable. The use of nitric acid as a fumigation, obtained by the decomposition of nitre in the vitriolic acid, I have not had sufficient experience of to offer an opinion on. It was made use of on board the Prince of Wales, of 98 guns, in the bay of Fort Royal; and as far as a few imperfect trials can
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tend to the establishment of a fact, it seemed to have been productive of benefit. It is dangerous, however to tread on this ground. Dr. Smyth must have been grossly deceived, or he must have had unjustifiable motives, or he must have had undeniable proofs of the efficacy of this mode of fumigation, when he assures us he has “ had the satisfaction to obtain the *most decisive evidence* of its happy effect, in preventing the spreading, or farther communication of contagion.”* It is also a most singular circumstance, that, if the diffusion of nitric acid gas, should be productive of dangerous consequences, and be a means of renewing the materials from which infectious effluvia are derived, instead of destroying those already exhaled, Mr. Menzies, and Mr. Baffan should give so decided a report of the success resulting from the experiment conducted by them on board the Union, hospital ship, which Dr. Smyth sums up in the following manner: “ Such has been the result of an experiment, by which some lives have been already saved, and from which two important facts are clearly established, viz. the power of the nitrous acid to destroy contagion; and the safety with which it may be employed in any situation, without inconvenience

* Description of the Jail Distemper at Winchester, &c.

or risk of fire.”* This result requires no small share of confirmation from the opinion of an able chemist, who says, “the fumes made in Dr. Smyth’s manner (if there is no metal employed in the vessel, &c.), is highly dephlogisticated or oxygenated nitrous vapour, and is also mixed with a large quantity of pure dephlogisticated air, which is extricated from the materials, and these fumes are not only not suffocating, but have a very pleasant smell, &c.”† Dr. Smyth has been severely handled by some eminent physicians and chemists, and their opposition has for its basis the “animal origin of nitre.” On this principle, one observes, that if Dr. Smyth had, to purify the building at Winchester, “instead of fumigating with nitrous acid gas, opened his snuff-box, and dispersed the powder of tobacco through the air of the apartments, he would have destroyed full as much contagion.”‡ Dr. Mitchell further remarks (on the experiment, &c.), that “beneficial as this trial is said to have been,

* An Account of the Experiment made at the desire of the Lords Commissioners of the Admiralty, on board the Union Hospital Ship, to determine the effect of the Nitrous Acid in destroying Contagion, &c. By James C. Smyth, &c. p. 59.

† Ibid. p. 67.

‡ See an ingenious paper of Dr. Mitchell’s, on the Nature of Septic Gases, &c. Med. Rep. vol. ii. p. 232.

I cannot refrain from thinking, that if the same things had been attended to, (viz. cleanliness, ventilation, immersion of the dirty linen in cold water, and the removal of noisome privies), excepting the septic (nitric) acid gas, the advantage experienced by the sick would have been yet more considerable, saving only the rendering the nostrils less susceptible of odours. Never was any thing more radically wrong than these proceedings."* Dr. Trotter, with still more violence, and perhaps irritation, animadverts on this process for the extinction of contagion: and in general observes, that "the idea that has given birth to these experiments, is evidently a remnant of the exploded doctrine, that contagion originated from *animalcula*. Hence a distorted philosophy ordered us to burn brimstone, and fire gun-powder in our ships: its Protean form, under the nitrous gas, is equally repugnant to chemical truths, as it was before. If such has not been their origin, there is an unpardonable negligence in chemical subjects, in a work avowedly held out as confirmed by trial and experiment."† Dr. Smyth has been also attacked by Dr. Beddoes,

* See an ingenious paper of Dr. Mitchell's, on the Nature of Septic Gases, &c. Med. Rep. vol. ii. p. 233.

† Med. Nautica, p. 231.

chiefly on the score of plagiarism, an objection of no moment, so far as relates to the utility of this mode of fumigation. My own experience of the merits of nitric acid gas as a destroyer of contagion, having been trifling and imperfect, it does not become me to interpose my opinion. I cannot help, however, observing that it does not appear that Dr. Mitchell, Dr. Trotter, or Dr. Beddoes have ever considered fumigation with the nitric acid gas, in the manner recommended by Dr. Smyth, in a practical view; on the contrary, we are led to believe that all their arguments in opposition to it, rest on the chemical origin and affinities of nitre, and its gaseous productions; and consequently are founded on theory: that it is extremely indecorous to bring forward accusations of so weighty and unpleasant a nature, as are implied in the strictures of these gentlemen, without a more solid evidence than that arising from suspicion, theoretical speculation, or perhaps a jealousy of the celebrity and reward obtained by Dr. Smyth: and that on the supposition that the combination of azote and oxygene, called by Dr. Mitchell the “gaseous oxyd of azote, nitrogene, or septon,” constitutes the basis or principle of contagion, it may admit of discussion, whether the oxygene diffused by the decomposition of nitre in the sulphuric acid,

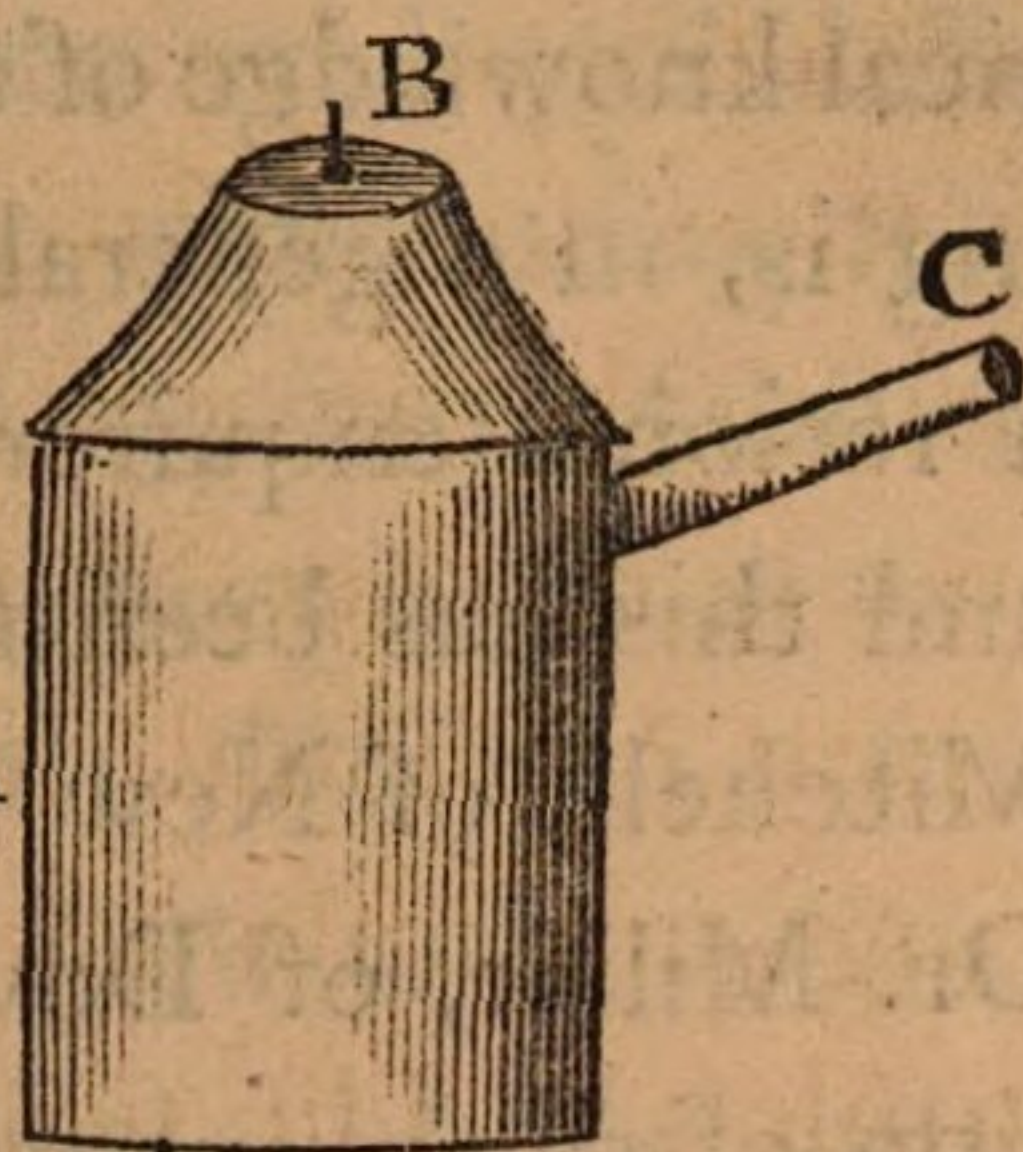
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has not a tendency to destroy the chemical combination so constituting contagion, especially as during the process, from the circumstances attending it, there is necessarily some augmentation of heat? Should this actually happen, the azote being uncombined, must become inactive and harmless. The nitric acid, which is the product of the decomposition of nitre in the sulphuric acid, as conducted by Dr. Smyth, is well known to contain oxygene in the proportion of almost 4 to 1 of azote or nitrogene, according to the experiments of M. Lavoisier; or, according to those of Mr. Cavendish, in that of 7 to 3; and it is on the knowledge of this proportion of these fluids obtaining in it, that the nitric acid has been so generally, and I may add, from my own experience, so successfully administered in a variety of diseases.

The application of oxygenated muriatic gas has been employed with success in the destruction of contagion or infection, and the following method of extricating it was recommended to me by Mr. Cruickshank, Chemist to the Board of Ordnance, on my leaving England. It is simple, and the utility of it has been ascertained. Let four pounds of common salt be intimately mixed with a pound and a half of manganese reduced to fine powder. Introduce them into a leaden vessel with a cover,

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see figure A, and add about two pounds of water, through the hole in the cover B. By means of a glass funnel introduce by degrees and at different times, three and a half pounds of vitri-



olic acid. In every addition of the vitriolic acid, the oxygenated muriatic gas will escape in great abundance through the tube C, and may be directed to any place and in any quantity we please. By the application of a moderate heat to the vessel, a very considerable quantity of gas may be obtained from the same materials, after they have ceased to give out any in the cold. This acid, in moderate quantities, may be employed to correct putrid and offensive smells in any particular ward, without removing the patients, and this it effects more completely than vinegar, or any other means usually employed.

2d, White-washing has long been a favourite, and an efficacious mode of destroying infection, but I believe the principle on which its beneficial effects depend, has been little attended to, and little known. It has been known to produce a change in the atmosphere of an infected chamber, highly salutary to the future inhabitants of it, and therefore it has been adopted. This empirical

rical knowledge of the good effects of white-washing is, in a general view, fully sufficient; but to a rational enquirer something more is necessary; and this has been furnished by the ingenious Dr. Mitchell, of New York, in a letter addressed to Dr. Miller, of Dover, Delaware. The explanation of the preventive action of this process, arises from the following chemical reasoning: The earthy materials of human habitations, whether of stone, brick, or plaster, may be considered as consisting in the main, of flint, clay, and lime. Of these the two last particularly demand attention in the view of preventing infection. Lime, after being deprived of its carbonic acid by fire, gradually recovers it in the state of mortar or plaster, and continues to do so till a substance, having a stronger attraction for lime, displaces or expels the carbonic acid. This substance is septous or nitrous acid (azote or mephites), continually extricated in rooms, which displacing the carbonic acid by virtue of a stronger attraction for lime, attaches itself to that calcareous basis in the form of a nitrate of lime. “ This operation may go on, in an old and foul house, until the whole of the lime is saturated with the septous vapour, and can take up no more; after this the pestilential gas, finding no other material (the clay having been also saturated), to form a chemical union

union with, will be accumulated and diffused through the room or house, penetrating the interstices of bibulous and porous substances. Walls made of lime and clay, may be thus viewed as preventives of infection. To make houses healthy then, the walls of such as have stood a long time, and have become highly nitrous, ought to be broken down, and fresh plastering of lime applied; or, if this could not be conveniently done, a *white-washing*, which is only a thinner coat of plaster, should be frequently performed. The septic fumes will then have something to attach themselves to, or be taken rapidly out of circulation." Numerous illustrations of this reasoning will, doubtless, occur to all who have paid the smallest attention to the subject. A very satisfactory one took place in the Ordnance Hospital at Fort Royal, Martinico, towards the end of the year 1797. The building employed for this purpose was the extensive range of classes attached to the College or Ecole de Saint Victor, well calculated for an hospital in every respect, except the situation, which is in the midst of a morass. The materials of which it is constructed are stone, brick, clay, and lime, and each room or class is neatly plastered with lime. The walls of the classes or rooms, we have reason to believe, had never since their first erection been white-

washed: and from the septous gas produced by the scholars, we have also reason to suppose, were pretty well saturated with that pestilential vapour before the British got possession of the place. It became the Ordnance Hospital almost immediately after that event in 1794; and from that time no idea of white-washing the walls was entertained till the year 1797, in December, when I had that operation performed as a means of preventing the alarming mortality which had hitherto taken place in the hospital, by destroying contagion on the foregoing principle. During the period between July, 1794, and July, 1797, 1219 patients (men), were admitted into this hospital, of whom 240 died, or one-fifth of the whole. After the adoption of this mode of purification, that is, from the 1st of November, 1797, to the 31st of January, 1799, the number of patients in the hospital was 929, of whom 83 died, or nearly one-twelfth of the whole. A malignant fever, of the typhus kind, had been introduced into the hospital towards the close of November, and the infection spreading, several patients were seized with it, who came in with very different symptoms. To this, another fatal cause may be added, a number of very bad cases remained in the hospital at the time Dr. Davidson took the charge of it from the former surgeon,

geon, about the end of November; and the fate of these had been in a manner decided on before the white-washing took place. The efficacy of the white-washing may be ascertained from the following detail. In November, 1797, 15 died, or 1 in 4; in December, 10 died, or nearly 1 in 4; in January, 1798, 3 died, or 1 in 12; in February, one 1 died, or 1 in 35; in March, 2 died, or 1 in 23; in April, none died out of 56; in May, the yellow remittent fever prevailed in the ordnance department, from causes which I have stated in the first Chapter of the fourth Part, but only 9 died, or 1 in nearly 11, in June, July, and August, during which the same dreadful malady prevailed, the proportion of mortality was about 1 in 12; and during the five remaining months of the period I have stated, although the same fever frequently appeared, the proportion was no more than 1 in 15, or 24 in 357. It gives me pleasure to add, that this small proportion of mortality during fifteen months, viz. 1 in nearly 22, must be attributed, in no small degree to the abilities and exertion of Dr. Davidson, who had the immediate direction of the hospital in which it took place; but that no infection was generated, and that what already existed at the time the white-washing was first re-

sorted to, was destroyed, is solely to be attributed to that salutary process.

3d, Ventilation. The processes for effecting this, are generally well known. In a hot climate, however, the means usually employed are either not necessary, or are inadmissible. A great deal of external air must be admitted into the sick-chambers, but the stream of it must not be permitted to rush on the persons of the sick. The most effectual manner of securing both objects, is to employ that kind of latticed window, called in the West Indies, a *jalousie*. This should be divided into two portions, so constructed, as that whilst the laths of the upper are horizontal, or nearly so, those of the lower shall lap over each other, or be so placed as to form a very acute angle with the horizon. The laths of both should be moveable, so as to shut close occasionally to prevent the admission of rain. Rooms intended for the wards of an hospital should have windows constructed in this manner, opposite to each other; and the intermediate spaces should be so calculated as to admit of one bed, or two at most. *Jalousies* thus formed, produce a complete ventilation; and should always be employed on shore to prevent or destroy the accumulation of infection. A variety of expedients have been resorted to,

to, to produce the same effect on ship-board ; but the least complicated will always be found the most useful. Pipes passing between the timbers of a ship, and opening into the cabin, steerage or holds, and carried over the gunwales, when practicable, will ventilate more effectually than any means I know. The square tubes passed through holes cut in the decks, employed on board transports during the present war, effect this in a very imperfect manner, and are subject to many objections ; the principal of which is, they cannot be worked but during fine weather, when they are least necessary. When a ship is to be fitted up for the transport service, the insertion of the pipes I have mentioned, should by no means be neglected, and may be completed with little trouble, and at a trifling expence. They should be constructed of thin plates of iron coated with tin, or white iron as it is commonly called ; their diameter may be about two inches ; their form square ; and they can be easily secured by taking off a little of the lining of the ship, which can be nailed on, after they are placed. An ingenious workman will find no difficulty in arranging them. Wind-fails are good ventilators, but their effect is partial, and they cannot be employed in stormy weather. The extractor, invented, it is said, by Sir Jerome Fitzpatrick, and put on board

the transports composing Admiral Christian's fleet, in 1796, would be extremely useful, were it possessed of more power; for when properly worked, no foul air could remain latent; until, however, its suction is very considerably increased, little benefit can result from its operation.

4th, Insersion. It is of much importance to employ such fluids as possess the greatest chemical attraction of infectious air, for the advantages resulting from insersion, altogether depend on this attraction. In this operation we perceive another instance of that mere mechanical correction of infection I have mentioned when speaking of white-washing, which arises from custom and practice without reasoning. We are again indebted to Dr. Mitchell, of New York, for an elucidation of this important point; and from him we learn "that if the ingredients of atmospheric air (septous and oxygenous gas), the commonest things in nature, do sometimes get into chemical combination, and produce a pestilential or non-respirable fluid; there is also another thing, one of nature's most plenteous productions, which seems, in its pure state, to be a sovereign preventive of a large proportion of their mischief." This preventive is water, with which, it appears from a variety of facts, the pestilential fluid constituting infection or contagion, is readily
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and entirely miscible. Water sprinkled in a sick chamber or ward, properly ventilated so that the heat may not be greater than that of the atmospheric air in the shade, by means of a garden watering pot, will effect more in the decomposition of infectious effluvia, than any other means, providing the due temperature of the air is preserved. Mr. Savary relates the method which the French, settled at Grand Cairo, adopt to purify from infection every thing but bread, during the prevalence of the plague. "As soon as the epidemic is declared, says that writer, the French shut up their quarter of Grand Cairo, and cut off all communication with the city. Arab servants, who live without, bring them every day their necessary provisions. Except bread, which does not communicate the poison, they throw every thing else through a wicket in each gate, into a bucket of water. This fluid purifies them, and they are taken out without danger. By means of these precautions, the French merchants preserve their health and their lives, environed as they are, with all the horrors of death." (Letters on Egypt, &c.) Dr. Rush warmly recommends the insperision of water, and the imitation of showers of rain in the infected district, by means of common fire-engines. The insperision of water should be so conducted as to re-

seem an artificial shower, in order that its operation may be as general as possible. The very large proportion of oxygen contained in water may readily account for its superior efficacy as a corrector of pestilential or infectious air; and may display the absurdity of the preference often given, with this view, to volatile aromatic fluids. *Æther*, oil of wine, spirit of turpentine, vinegar, aromatized waters, may certainly be useful by the impression of confidence attached to them; but their real utility, it is probable, is only in proportion to the oxygen they contain. I have met with no writer who recommends *æther* as a prophylactic, but M. Poissonnier. “ Quand on considère que quelques onces d’*ether* peuvent répandre l’odeur la plus suave et la plus salutaire dans un très-grand hôpital sera-t-on arrêté par la dépense que cette prétendue profusion occasionnera ! S’il est un cas où il soit beau d’être prodigue, c’est celui où l’on soulage, les malheureux.”* Should, however, the expence be considered as an objection to the insersion of this fluid, there are others which may, perhaps, with equal efficacy, be substituted, such as the *ætherial* oil of turpentine, or the common spirit or oil of that substance. Their smell is wonderfully pe-

* *Traité sur les Maladies des Gens de Mer*, tom. i. p. 360.

netrating and permanent ; and the rubbing the bed-posts with them, and sprinkling them in places most liable to receive and retain infection, would, I have no doubt, be infinitely beneficial.

5th, The burning of aromatic substances has been resorted to as a means of destroying infection from the earliest periods, we are acquainted with. Incense burnt on a censer, and carried by Aaron in such a manner as that the vapour arising from it, might float in the atmosphere between the bodies dead of the plague, and the living, we are told, stayed the plague, or prevented the propagation of infection. But from the manner in which this transaction is related, and the time in which the effect was produced, we must suppose the interposition of a miracle, to account for the efficacy of the process.* That a miracle alone can render the practice beneficial in destroying infection, has been proved by all those physicians who have had actual experience of it : and it is not

* “ And Moses said unto Aaron, take a censer, and put fire therein from off the altar, and put on incense, and go quickly unto the congregation, and make an atonement for them : for there is wrath gone out from the Lord ; the plague is begun. And Aaron took as Moses commanded, and ran into the midst of the congregation ; and behold the plague was begun among the people : *and he put on incense, and made an atonement for the people.* And he stood between the dead and the living, and the plague was stayed.” Numbers, ch. xvi. v. 46.

improbable that if any thing like benefit has ever been the consequence, the agency of heat has been the cause. It ought to be considered as dangerous, because the persons exposed to the action of pestilential air, by having a confidence in aromatic steams, inevitably must suffer by it. M. Chaptal says, olibanum or frankincense "is used in hospitals, to disguise the smell of the putrid air which is exhaled. M. Achard has proved that this proceeding has no other effect than that of deceiving the sense of smelling."* Leaving these substances to be applied to the purpose they are best calculated to serve, beguiling the mind into acquiescence to the mystic rites of superstition; for "*omnibus illa quidem superis pia thura ferebat,*" I shall offer a few observations on,

6th, The use of such substances, as, possessing a greater attraction of the basis of contagious effluvia, may prevent their diffusion in the atmosphere of the sick chamber. Of these, the best, are lime; lime-water; water in earthen vessels; caustic alkalies; muriatic salt and common earth. The lime moistened with water, and set in small tubs, has a powerful effect in absorbing the infectious effluvia; and if renewed, once in the day, will doubtless prevent much of their mischievous

* Elements of Chemistry, vol. iii. p. 33.

consequences.

consequences. Lime-water may be a neater mode of operating the same effect, though by no means more powerful. The efficacy of the caustic alkalies, as correctors of putrefaction and animal poisons, is well known. How far their antiseptic powers may be extended to the prevention of infectious or pestilential gas, I am not competent to say ; but analogy encourages a trial ; more especially as neither expence nor additional trouble are incurred. But the application of muriatic salt to the production of the same effects, is more easy, and perhaps fully as certain. A few small vessels filled with salt and placed within the radius of the infected or pestilential atmosphere, cannot produce inconvenience, and may counteract the deleterious power of the poison continually emanating from the person of the sick. The strewing of fresh earth on the floor of the sick or infected chamber, or the placing of several pots filled with it, will also be attended with advantage.

7th, The use of such substances as diffuse a strong, grateful, and perhaps counteracting odour. That there are substances whose odorous effluvia can counteract the effects of the poisonous basis of contagious gas, is extremely doubtful. I am free to confess that I have never experienced the smallest efficacy from them in any instance whatsoever :

foever: thus the usual manner of keeping camphorated or aromatic vinegar to the nose, or suspending small bags of camphor, musk, asafoetida, &c. on the breast; or dispersing any of these over the sick chamber, are not attended with any beneficial consequences. Much dependence is, however, generally placed on them, and as they are innocent, they may be permitted. The boughs of fresh aromatic trees, shrubs, and flowers of a strong and agreeable odour, must, however, be excepted. The continual exhalation of oxygenous gas from these during the day, together with the tranquilizing effect of fresh sweet smells, characterize them as correctors of infectious air. Of this tribe, within the tropics, the fresh leaves of the pimento or Christmas bush (*Bois d'Inde*, the *Myrtus Pimenta*, Linnæus); fresh gathered ripe cloves exposed to a slight heat; fresh gathered orange flowers; the flowers of the franchipanier or damask jasmine (*plumeria flore roseo odoratissimo*); the wild and garden basil (*basilicum maximum*); and the flowers of the logwood (*hæmatoxylon*); to a sick person have a most pleasing invigorating effect. Those should be frequently changed; and as, whether in a vegetating state or not, they disengage azotic gas during the night, it may be proper to discontinue them at that period. Dr. Rush remarked that
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the use of garlick was beneficial in preventing the disorder during the prevalence of the bilious yellow fever of 1793, at Philadelphia. In a work published in 1795, at Saltzburgh, by Dr. Canestrini, on the Diagnostick of the Plague, and Pestilential Infection, a variety of ingenious observations and useful facts are presented to the reader, on this interesting subject. The safety of those employed in burying the deceased, he thinks it probable, may be owing to their use of garlick: with which, bruised, they used to rub their hands, face, and breast, and also to chew it, previous to their entering into an infected house. It is also remarked that places adjoining spice shops remained free from infection. (See Med. Review, vol. iii. p. 255).

CHAPTER IV.

Dietetic Regulations, and Moral Conduct,

DURING the prevalence of a pestilential fever, the great prophylactics are temperance in eating and drinking; regularity in exercise; the proper distribution of time with respect to sleep and watching; attention to cleanliness of person: and the avoiding such gratifications as have a tendency to weaken the vital powers. The words of Celsus, in his “*Observatio in Pestilentia*,” are very comprehensive, and highly deserving our serious attention—“*vitare fatigationem, cruditatem, frigus, calorem, libidinem; multoque magis se continere.*” The observation of this rule must prevent much violence of symptoms, should it not be sufficient to prevent the admission of infection. But it is a mortifying consideration, that few British can be prevailed on to submit to the rigour it apparently implies; and gratification of every description, if within their ability to purchase, is unfortunately very generally, and very pertinaciously, resorted to. The conduct of our countrymen within the tro-

pics, compared to that of other nations, furnishes a too striking illustration of a remark which, were it less obvious, might be held out as malevolent. Whilst the pestilential fever raged at Grenada, the utility of these means was remarkably illustrated, by the almost total exemption of the French inhabitants from the disease. Their mode of living is, comparatively, temperate and regular, in an uncommon degree; animal food, and strong liquors, are very moderately used by them; vegetables, and small red-wine, considerably acid, chiefly compose their diet; their passions are seldom excited to any degree bordering on excess; their minds seem, in general, tranquil, or actuated by a vivacity peculiar to themselves; and depression, or that state of the animal spirits they call ennui, is never perceived to have place among them. Another illustration, was the exemption of the inhabitants of St. Pierre's, Martinico, from the pestilential fever imported into the road of that port from Philadelphia, towards the end of the year 1793. M. D'Austi assured me, that none of the French inhabitants, or the Acclimatés, as he expressed himself, received the infection; a circumstance to be attributed to their temperance and cheerfulness. How different was the action of this dreadful scourge on those unhappy inhabitants of Martinico,

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the very same people, when, under the pressure of passions of a debilitating and turbulent nature, and unaccustomed restriction to a diet of animal, and perhaps unwholesome, food, and heating pungent liquors. At Grenada, St. Vincent, Dominica, and other islands, where they found an asylum from the tyranny of an opposing enthusiastic party, they also experienced the baneful influence of pestilential infection, when not counteracted by temperate diet and tranquillity of mind. The event among these people is noticed in communications from the other colonies. At Grenada, many of the emigrants from the French islands, particularly Martinico, who, from their unhappy situation, could not accommodate themselves with their customary modes of living, and whose minds, suffering under the pressure of disappointment and deprivation of property, were subject to an unnatural depression of spirits; and some French prisoners, who, at that time, were obliged to live on salted animal food, and to use rum diluted for their drink, which articles composed the ration of provisions allowed them by government, did not enjoy the exemption their countrymen, inhabitants of the island, experienced. Many of the former, and all the latter, had the disease; and many fell victims to it. Want of cleanliness, and due ventilation, could have little share in

in increasing the violence of the disease among the prisoners; for their confinement was limited to the extent of the ridge of Hospital-hill; from the purer air of which the 45th regiment had immediately before derived so much benefit. The event, too, among the negroes, more especially those employed in the cultivation of plantations, affords another remarkable proof of the great benefit resulting from temperance during the existence of pestilence: for, although it is highly probable, that the negro race possess something constitutional, which resists the action of contagion in a very great degree, still it must be admitted, that their necessary temperance must have contributed much, in the present instance, to their exemption from, or to the mildness of the disease when it appeared among them.

During the prevalence of pestilence, I am inclined to think, from a variety of facts, that abstinence from every species of strong liquor, wine itself not excepted, is more conducive to the maintenance of health, than any other dietetic regulation whatever. It is an established fact, that water-drinkers either escaped the malignant pestilential fever altogether, or had the disease in a remarkably mild degree. On the other hand, many instances occurred of free livers receiving the infection in the morning, and having the attack of the fever after

a plentiful repast of animal food and wine in the following night. Vegetable should constitute a much larger portion of diet than animal food; and indeed the avoiding the latter altogether would be a very beneficial measure. It is singular there should be any diversity of opinion on this important point; for a knowledge of the predominant principles of animal matter, and wine, must, in all sensible judicious minds, decide incontestibly against their use, more especially their free use, during a pestilential season. That principle which is destructive of life, and thence by the French chemists called azote, is the predominant one of muscular flesh or animal food; and a combination of hydrogen and carbonic acid, known by the name hydro-carbonate, the basis, probably, of the poisonous exhalations from marshes, is the basis of wine.* Are we then to second the operations of pestilential infection, by taking into our bodies substances pregnant with the materials of its composition? The fool and the madman, affected only by sensual pleasure, may answer yes; but the man of sense will intrepidly declare

* Fourcroy's Elements of Nat. History and Chemistry, vol. iii. p. 10, 259. An observation of Dr. Mitchell's, of New York, is well worth serious attention. "I doubt, says he, whether the metallic rod will more securely guard us from lightning, than vegetable food preserves us from pestilence." Remarks on the Gaseous Oxyd of Azote, &c.

the mischievous consequences of such gratification.

But without attention to another important precaution, the regulation of diet can be productive of only partial good. This precaution is the avoiding constipation, and strengthening the general habit. This is best done by occasional purgatives, and the use of the cold bath ; by immersion, if no topical complaint renders it unsafe ; or affusion, if otherwise. Bark, I fear, is possessed of no efficacy in strengthening the body against the invasion of infection : sure I am, its preparations too often destroy the activity of the gastric functions. If these require the aid of stimulation, it is most perfectly and agreeably produced by the various preparations of ginger ; or by the addition of capsicum to the food they are to digest.

CHAPTER III.

Means of preparing the European Constitution for the Process of Assimilation to the tropical Climate.

IN the course of my residence in the West India Islands, I have observed, that the descriptions of men most subject to the attack of the higher grades of the remittent fever, as well as to that of the malignant pestilential fever, have evidently been such, as are unhabituated to the torrid zone ; such as possess plethoric habits ; such whose temperament is sanguineous, and fibre rigid. In proportion as their residence is lengthened, and plethora, and the circumstances of predisposition to be acted on by morbid causes, are removed ; in other words, as the process of assimilation advances, so is the danger attached to the diseases they may be afflicted with, lessened. What principle this assimilation depends on, is extremely doubtful ; but it is obvious, that it is on a knowledge of it, a judicious plan of preparation can be founded. Were I permitted to draw inferences from the data which eudometrical experiments on the composition of the atmosphere

mosphere of the West India climate, seem to furnish, compared with the known proportions of its constituent fluids, in that of a cold one, I would say, that assimilation depends on an increased accumulation of oxygene. A theory, founded on this principle, gives a ready solution to all the phænomena of seasoning; and explains the aptitude of Europeans or natives of cold climates in general, to suffer by the morbid causes, endemic, or imported, they encounter on their arrival in the West India Islands; as well as the immunity which the indigenæ and the assimilated enjoy. It also points out the means which should be adopted to render this accumulation entirely innocent; or, at least, to free it from a large share of the danger accompanying it to the imprudent stranger. It is manifest, however, that tranquillity of mind and body, for some time after arriving in the tropical climate, is a necessary condition to give effect to a plan of preparation: for without attention, in this respect, the very means employed to deprive the process of assimilation of its destructive consequences, will themselves prove deleterious. Hence the difficulty of effecting this purpose in troops employed, immediately after their arrival, on actual service: during which, the excessive heat and fatigue they are exposed to, together with the large quantity

of animal food which necessarily enters into their diet, gives a tendency to the preparatives already exhibited, to enfeeble the body, and at length to make it sink under the debility induced; or to counteract the intention they have been calculated to promote, and to convert them into powerful predisposing causes. Could, however, the exigencies of the state, and the situation of the colonies, during war, permit the indulgence of a few months of ease and tranquillity to troops on their arrival from Europe, in an island where endemic causes of disease are not common, such as Barbadoes, St. Christopher's, and St. Vincent, there is no doubt much might be done to prevent the danger in assimilating their systems to the climate. The situation of white European servants is, in many respects, similar to that of our soldiers, on their arrival from Europe. They often have the misfortune to be employed by inconsiderate masters, and consequently are exposed to all the heat of a sun which raises the thermometer to the 120° , to sudden alterations of this heat with cold moisture, which lowers it in an instant upwards of forty degrees; to considerable fatigue; and without the solace of comfortable accommodation and diet, although probably accustomed to both in their native country. When humanity and generosity give rise to different treatment,

treatment, the assimilation of their systems proceeds with tranquillity, and they soon enjoy health in a super-oxygenated medium, equal to what their native air might permit. The situation of persons differently circumstanced, leaves it optional whether they shall be healthy, or fall victims to the climate. The adoption of the means of preparation I have to propose, joined to the exertion of prudence after their landing, may secure the former: the neglect of them, especially when joined to indiscreet indulgence, will with certainty promote the latter.

In crossing the Atlantic to the West Indies, the change of temperature in the atmosphere is gradual; and it is not, till the 24th or 23d degree of latitude is reached, when the thermometer rises to about 72° , the human body perceives itself materially affected by it.* At this period of the voyage, catarrhal complaints, and determinations to and slight congestions in the lungs, the liver, and the head, together with eruptions on the surface, and a tendency to stupor and drowsiness, are felt. The presence of these,

* It is highly probable that the accumulation of oxygene begins to take place on reaching the tropic; for in a voyage from New York to the West Indies, during which experiments with the endrometer were made, it appeared that the proportion of vital air in the atmosphere in the latitude of 34° was about .46.

and the degree of their violence, depend altogether on the persons being accustomed to continued and uniform heat, and on their temperament at the time; consequently youths and men in the prime of life, on their first voyage, are most acted on by the augmentation of heat, or, perhaps, more properly speaking, of oxygene. If nothing is now done, a febrile diathesis of more or less danger, may be produced; but if measures of common prudence are resorted to, the symptoms I have mentioned, gradually disappear, the perspiration process readily carrying off the surplus of heat. On arriving in the West Indies, where, I have already observed, the proportion of oxygene in the atmosphere increases to from .50 to .66, the danger of the unassimilated is proportioned to the measure of prudence they adopt, and the rest and tranquillity they are permitted to enjoy. The wise provision of nature often compensates indeed for the indiscreet conduct of strangers to the climate; an ample flow of fluid from the surface, rendering ineffectual their own endeavours to give their persons additional predisposition to disease; but this is still oftener counterbalanced by a variety of causes. If nature is disturbed or counteracted, by intoxication, by violent exercise, by a lengthened, and especially a stationary exposure to the rays of a fervid sun,

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by late hours, by night air and dews, the heat disengaged from the oxygene, accumulates, and, conjoined with other morbid causes, to whose action it predisposes, produces the most fatal effects. With this idea of the process which takes place in the human system on a change from a cold to a hot climate, we can readily perceive the utility of resorting to the following preparation.

On reaching the tropic on the 24th or 23d degree of north latitude every stranger to the torrid zone, should be let blood to an extent proportioned to his age and strength; and a saline purgative should be immediately after administered. The plethora and rigidity of fibre thus in some degree lessened, cold bathing should be employed daily, either by affusion or immersion; but as the diminution of heat is the object to be obtained, the former is perhaps preferable. It is of importance to render the operation of bathing where many are to be subjected to it, as convenient and easy as possible; a sufficient number of buckets cannot always be had; and the space occupied by large bathing tubs or casks, cannot often be spared. In a voyage from Tortola to Martinico, in the Aimable frigate, Capt. Lobb, the worthy and estimable Commander, informed me, that to obviate these inconveniencies, he

he had, whilst Commander of the Babet, recourse to a bathing cot made of canvas, sufficiently large to receive twelve men at a time. The cheapness of this machine, together with the ease with which it is stowed away when not in use, point out the cot as an excellent substitute for bathing tubs on board transports, where generally little room is left unoccupied. The Babet cot required no more than 27 yards of canvas, which, allowing the price to be one shilling per yard, will cost no more than 1l. 7s. and consequently the whole apparatus, including thread, and the wooden frame which should be jointed, can be shipped for 2l.* The bleeding should be repeated

* The use of sea bathing in crossing the tropic is as old as the earliest voyages to the torrid zone; and was first probably suggested by something like an instinctive impulse to relieve the persons of men from the superfluous heat. The practice of dipping the unacclimated on his arrival at the tropic had perhaps a superstitious origin. Different nations assign different motives for it. The Dutch maintain that it was resorted to for the purpose of preventing many of those diseases which Europeans are subject to on their first entering the torrid zone; and they therefore universally employ bathing in the sea, as well those who have already visited a hot climate, as others. The English practise it for no other purpose but that the young traveller may recollect his having passed the tropic; or perhaps from the mirth it gives rise to. The R. P. du Tertre will have it to have proceeded from gratitude in the first adventurers who had the boldness to sail into the torrid zone, which till then, says he, was considered by St. Augustin, and many others, as not habitable; and they, therefore, with the devout idea of a new

repeated once before landing ; but the purging should be frequently resorted to. Perhaps the best purgative medicine in these circumstances, is a sufficient dose of sea water, preceded, the evening before, by a pill composed of five grains of calomel, and one of tartarized antimony. To second this course of medicine, the diet should be made as cooling as possible ; and for this purpose, only a small proportion of animal food should enter into it. Salted meats should be deprived of their salt as much as possible, by long maceration and boiling, and by various adjuncts, particularly vinegar and mustard. I suppose that the usual methods pursued of sweetening the ship, by insersion, fumigation, and ventilation, have been assiduously employed during the commencement of the voyage ; and I now wish to impress the necessity of recurring to them with additional circumspection. Other precautions are equally necessary to prevent the generation of infection, and the accumulation of heat in the persons of the men. If their number is consider-

new birth, practised a new baptism on the occasion. “ *Se voyans entrer comme dans un autre monde firent un sorte d'allusion au baptême, que l'on donne aux Chrétiens après leur naissance ; et en effet on se sert encore du mot de baptiser sous le tropic, pour exprimer cette cérémonie.*” tom. ii. p. 48. I leave the reader to decide the point ; perhaps he may conclude with me that the former were the best philosophers, the latter the best Christians of the two.

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able, one-half should be always on deck; hammocks should be used instead of berths; and both these and blankets, for no beds or mattresses should be allowed, should be all day disposed of on deck; cheerfulness and innocent mirth should be encouraged; and such exercise as the situation admits should be enforced. Perspiration being the great means employed by nature to carry off the superfluous heat, every thing which promotes it should be used, and every thing which restrains it should be avoided. Dilution is, therefore, in every respect highly necessary: and it is evident that water is the fluid best calculated to effect this; for, whilst it promotes perspiration, it necessarily prevents determinations and congestions. If any additions to it are thought necessary, they should be such as may render the water more pleasant, and give it a greater tendency to increase alvine evacuation, and perspiration. These effects cannot be promoted by the copious mixture of ardent spirits so freely indulged in by soldiers and sailors; nor can the intention of dilution be fulfilled by the large quantities of wine and fermented liquors indulged in to an equally destructive excess, by a great majority of men in the higher walks of life.

After landing, the first object is to place troops in a situation not subject to the influence of marsh miasma;

miasma; and in barracks commodious, well ventilated, and kept perfectly clean: the hammocks and bedding in use during the voyage should be destroyed, and new ones issued to them: their diet should be regulated by the commanding officer, and not left to the whim or caprice of the men themselves: exercise should be frequent and regular, but not so long continued as to induce fatigue: and exposition during exercise to the sun, should be gradually introduced, so that the body may be accustomed to its usual heat, before the exertions of the men in the field are required. With respect to medical treatment with the view of preparation, the observation of one general rule will be sufficient. If plethora, fulness, and rigidity of fibre, continue, they must be diminished by occasional bleeding and purging; the surface must be kept clean, as well as cool and permeable by daily affusion of, and occasional immersion in cold water, or, at least, of the temperature it is generally met with, within the tropics, viz. 74° to 77° ; if the barracks are situated near the sea, bathing in salt water, the temperature of which is generally 79° at noon, will be generally found preferable to that in fresh. Much has been said of the preventive and tranquillizing efficacy of the tepid or warm bath in the tropical climate, by English as well as French physicians.

physicians. M. Desportes, one of the most judicious of the latter, speaks of it in terms almost bordering on enthusiasm. “ Je puis assurer que je ne connois point de remede plus specifique dans les maladies des pays chauds, et je suis bien surpris de la negligence que l’on a s’en servir, non-seulement en maladie *mais aussi en santé pour prévenir la maladie.* Je souhaite qu’on profite de cet avertissement et de ce conseil. Je pense n’en pouvoir donner de plus salutaire aux François des colonies, pour conserver leur santé et guérir plusieurs de leurs maladies.”* Since his time the use of the tepid bath has become very general in the French islands ; and custom, the pleasing relaxation it produces, or the salutary effects experienced from it, have given it a celebrity which the cold bath does not possess. The French, in fact, very often spend hours together in their tepid baths, occupied in conversation or reading ; and, no doubt, the great accommodations to be met with at St. Pierre’s, at a trifling expence, are strong incitements to a luxurious lounge of this kind. The English, following the example of the French inhabitants of Martinico, have also acquired the habit ; and from one or all the causes I have mentioned, also give the tepid

* Maladies de St. Dominique, tom. i. p. 127.

bath the preference. How far, however, it may act as a preventive of tropical diseases, or as a preparative of the unassimilated constitution to undergo a change of climate, I cannot decide. From its known effects on persons not peculiarly circumstanced, it offers a fair prospect of being highly useful; for a certain degree of relaxation, a permeable skin, cleanliness, and an equal circulation, all which it promotes, are the great points to be obtained to favour the process of assimilation. It will be highly necessary to confine the use of this agreeable luxury within due limitations; for it is probable that an excess gives a permanent debility to the body, which a change of climate, far from obviating, might render fatal. The only real objection to the reasonable and cautious employment of the tepid bath among troops, is the difficulty which has ever been experienced to bring them to adopt the means of maintaining a sufficiency of uniform heat everywhere on the surface. It is impossible to divest them of the idea that flannel next the skin, and a hot climate are absolutely inconsistent, although every day affords innumerable proofs of the contrary. Hence the use of the tepid bath may among soldiers be attended with considerable danger. Its danger may appear by taking it in another point of view. A soldier's life during war

war is a never-ceasing series of vicissitudes ; the body is exposed alternately to great heat, and considerable relative cold ; to a profuse perspiration and adstriction of skin ; in a situation thus circumstanced, relaxation may be carried too far by the use of the tepid bath, and lay the foundation of innumerable evils. These objections do not apply to individuals who possess the power of accommodating themselves to circumstances ; and to them, it is obvious, the tepid bath may be highly beneficial, as a preventive or preparative remedy. It is highly probable that the adoption of inunction, as recommended by Dr. Currie,* and so universally employed by all eastern nations, might prevent all the mischievous consequences, the unqualified use of the tepid bath may be attended with ; but if the wearing of flannel next the skin has been rejected, from no other cause, but the inconvenience of the friction, and the temporary unusual heat, it occasions, what reception are we to expect the recommendation of a greasy application will meet with from our inconsiderate countrymen in the torrid zone. Many and powerful reasons urge the propriety of the trial however ; and perhaps the wonderful efficacy attributed, by Mr. Baldwin, the British

* Med. Reports on the Effect of Water, &c. p. 205.

Consul-General at Alexandria, and communicated to the public by Count Berchtold, to warm frictions with olive oil, both as a preventive and as a cure of the plague, furnishes one of the most cogent.* It would, therefore, be a wise measure in Government, to instruct the commanding officers of regiments destined to serve in the torrid zone, to enforce, as much as possible, the inunction of the bodies of the soldiers daily, or, at least, after immersion in, or the affusion of warm or tepid water. Such an instruction cannot surely be considered as unnecessary, nor can ridicule be attached to it; when we reflect how imperfectly informed our officers are with respect to the proper means of rendering the process of assimilation less dangerous; and when we recall to our minds the melancholy events in the West India islands, during the last six years, produced by the neglect of these means, fully as much as by the virulence of infection, or of marsh miasmata. Whilst I am on this subject it may not be uninteresting, perhaps, to observe, that, in the colony of Demerary, of South America, a most singular and uninterrupted freedom from disease, particularly of a febrile character, is enjoyed by the la-

* Annals of Med. vol. ii. p. 373.

bouring negroes, who are never permitted to make use of any other covering in the way of clothing, than such as is just sufficient to answer the purposes of decency. This is effected by the men by a small triangular piece of cloath, called a lap, and by the women by a single petticoat. The nature of their work renders immersion to the middle in water, very frequently necessary; and during the two rainy seasons of that country, they are almost continually, except at meal-time, and during the night, exposed to rain. To counteract the supposed baneful effects of these causes, nothing is done, but furnishing them most amply with wholesome, chiefly vegetable food. Is it the equable temperature, which leaving their persons in almost a state of nature, produces the cause of this uncommon health? This is probable from the observation that sickly negroes, and negroes subject to the mal d'estomac of the islands, when sent to Demerary, reduced to nakedness, and well fed, have their health quickly restored to them. No doubt the "unctuous sweat" of the negroe, which we may suppose guards his system against the inconveniences I have mentioned, may contribute much in the production of this effect; for it is not absorbed by clothing, and is consequently always present during labour, and "sustains a
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more uniform perspiration as well as evaporation."*

Bleeding; although universally practised, and to an unnecessary and even fatal extent, by the French, as a remedy in the fevers of the West Indies; and although it has found admission into the practice of most English physicians at the commencement, and during the first or inflammatory states of the same fevers; yet it has been wonderfully neglected, although frequently recommended, as a preparative means for the assimilation of the European constitution to the climate of the torrid zone. As there is not a more certain means of lowering the tone of the solids, and diminishing a tendency to inflammatory diathesis, so it must be evident there cannot be a more suitable preparative for a warm climate, under proper restrictions, than bleeding. I wish, therefore, to impress the necessity for the employment of this remedy in persons unaccustomed to its heat, on approaching the tropical climate. Perhaps it may serve as an illustration of the truth of this position, what M. Chevalier relates of himself. After showing by arguments drawn

* See Dr. Currie on this subject, ch. xv. Reports, &c. where it is treated with his usual ingenuity and acuteness.

from the nature of the animal œconomy, and from the consideration of what he conceives to be the proximate or immediate cause of the yellow remittent, and other malignant fevers of the West Indies, viz. “ un engorgement de sang dans les visceres, & principalement dans le cerveau,” as well as from the false, but equally dangerous plethora produced, in those who “ n’auroient point trop de sang,” and who may live soberly and prudently during the voyage, and after their arrival, by “ l’épaississement inevitable des liqueurs, et la raréfaction de l’air qui se trouve dans toutes les parties du corps mêlé avec le sang;” after showing thus the necessity for employing bleeding on approaching the tropic, and repeating it afterwards, he gives the following account of the manner in which he treated himself, to his correspondent M. de Jean. “ Je crois vous avoir dit, mon cher confrere, que je n’éprouvai point cette fièvre maligne, parce que je me fis saigner avant de sortir de Paris, je me fis saigner à la Rochelle, à la Martinique où nous mouillâmes; je me fis saigner deux fois sitôt que je fus arrivé à St. Dominique : aussi, la première année je n’eus point d’autre incommodité que celle qui m’avoit fait quitter Paris, je veux dire des froids de tête, qui par trois reprises me donnerent la

fièvre

fièvre comme j'avois coutume de l'avoir ici ; depuis j'en ai été quitte, &c."* A singular instance of the imprudence of drinking wine to excess during the passage to the West Indies, and of the utility of bleeding, Du Tertre attests in the account he has given of his second voyage, in March, 1640. During a short stay at Madeira the passengers indulged so freely in wine, and heated their blood and brain to such a degree, that Du Tertre was at a loss whether he should attribute the evils they soon after experienced to that cause alone, or to that in conjunction with the violent heat they were soon after exposed to sailing along the coast of Africa. The consequences were, however, very extraordinary : “ Nous n'eumes pas fait cent lieues, que les mieux s'enfer d'entre nous commencèrent à perdre l'esprit, et à devenir hypochondriaques, sans qu'il parût aucune fièvre. Tout notre pauvre équipage étoit pour lors un objet digne de risée et de compassion tout ensemble : les uns s'imaginoient avoir la mort sur les épaules, et s'efforcoient les jours et les nuits entiers à se décharger de cet importun fardeau : d'autres s'occupoient à rouler des barils sur le tillac : d'autres se persuadoient qu'ils étoient rois, et traitoient tous les

* Lettres sur les Maladies de St. Dominique, p. 27—32.

autres d'ambassadeurs et de princes ; enfin chacun faisoit un métier différent. Cette étrange maladie dura trois semaines, pendant lesquelles il n'y eut jamais que deux ou trois personnes raisonnables dans la navire, que Dieu y conserva sans doute pour empêcher les autres de se précipiter dans la mer, et pour tenir la barre du gouvernail ; car sans cela le moindre coup de vent nous auroit infailliblement fait périr ; si l'on nous avoit rencontré dans ce pitoyable état, on auroit cru ç'auroit été une transmigration de l'hôpital des petites maisons de Paris aux Indes. Onze personnes en moururent, et tous ceux qui avoient été frappez de cette épouvantable phrénésie, furent plus de trois mois sans pouvoir se remettre ; *et je crois que si je ne me fusse avisé de les faire saigner au front par le chirurgien (qui par une grace de Dieu particulière fût exempt de ce mal) la plus grande partie auroit perdu la vie.*"*

The histories of Calenture do not probably furnish a more remarkable instance of the effect of climate on the unaffimilated ; and it is the more to our present purpose, as its violence evidently proceeded from great imprudence joined to the usual cause, heat.

When I last crossed the Atlantic to the West Indies, about eighty persons, fifty-two of whom

* Histoire Générale des Antilles, tom. ii. p. 60.

were healthy robust youths, or men in the prime of life, of the royal artillery ; and a crew consisting of twenty-four, equally youthful and robust, were on board the same ship. All these, except the women and children, were largely bled on our reaching the tropic ; purgative medicines were freely exhibited ; bathing was employed ; and, in short, all the means of preparation described, were employed before our arrival on the 1st of April, 1796, at Barbadoes. Another detachment, composing the other half of the same company of artillery, were embarked in another ship, and treated in the same manner by a very ingenious and skilful young medical gentleman, Mr. Allan, of the ordnance. The soldiers of both these detachments were placed, after their landing, in comfortable barracks ; but a considerable share of fatigue was undergone in preparing a train of ordnance for the campaign. Notwithstanding this, on the departure of the army for St. Lucia, on the 22d, not a man of these detachments was sick. The excessive heat and fatigue which the very arduous service of the siege of Morne Fortunée gave rise to ; succeeded by a most uncomfortable and disturbed residence, during eight months, on the Morne, after its surrender : and the influence of marsh miasma, and the exhalations from thick woods, in which they

were continually enveloped, unhappily counteracted all the means of preparation which had been employed, and furnished an incontrovertible and melancholy proof of the necessity existing for the condition required to give efficacy to them. On the 4th of June, when Captain Arbuthnot's company of artillery was thus left on Morne Fortunée, it consisted of 106 men, including officers; on the 13th of February, 1797, eight months after, they were reduced by disease to 37. The fate of the crew of the ship was very different. They had undergone the same preparation; after their arrival in the West Indies they were employed on no other service but the usual duties of their stations; but as the ship was stationed for a considerable time in the Carenage of St. Lucia, for the reception of prisoners, they were exposed to all the deleterious vapours of that most unwholesome situation, besides being incommoded with all the unpleasant circumstances inseparable from a prison ship. Notwithstanding these morbid causes, and although only four of the crew had been before in the climate, only one man died, who had contracted his disease, a pulmonic consumption, during the voyage.

PART IV.

Illustrations of imported Infection into the West India Islands, and the Colony of Demerary, in South America, during the Years 1793, 1794, 1795, and 1796.

CONVINCED that the truth of my general position can be established alone by the concurring testimony of many; and that the public have a right to withhold their belief till such manifestations of the existence of a fact are produced, as must secure conviction—satisfied also, that assertions, however unfounded, tending to subvert the impression made by a faithful narrative of events, may have the effect they are calculated to produce, unless it can be proved, that the same, or events of a similar nature, arising from the same cause, have been observed and recorded by others, as well as the original narrator; I have paid uncommon attention to the subject of imported infection, from my arrival in the
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West Indies in 1796, till such time as I acquired, what I conceived, sufficient additional evidence of the truth of what I advanced on good, but limited, grounds, in 1794. The result of my enquiries and labours I now submit to the consideration of my readers, without any addition or comment on the information I have received, but such as are necessary to elucidate the subject. In statements of this nature, an important point has been very generally neglected: without a delineation of the circumstances relating to the topography, endemic morbid causes, climate, &c. of a country, how is a stranger to discriminate between the morbid constitution of any particular year, and that which generally prevails, and arises from causes merely local? The conclusions he may draw, without this assistance, will often be erroneous, and can never be perfectly correct. It is to assist the reader's discriminating powers in this respect, I have prefixed a general account of each colony, to the evidences of imported infection into it, I have been able to obtain; and, I trust, that on having done this, I shall be gratified with his approbation.

Few individuals have had better opportunities of satisfying their curiosity, or of illustrating their opinions, than I have had. Entrusted with
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the important and arduous charge of correcting the abuses which had crept into, and of placing, on a more respectable and œconomical basis, the medical establishments of the Ordnance in the West Indies, the Right Honourable the Master General, and the Board of Ordnance, invested me with adequate powers, and furnished me with instructions to institute a general and minute inspection of the expenditures and arrangements of all their hospitals in that country. The execution of this service, whilst it rendered a voyage to all the colonies necessary, also presented a wide field for medical observation and enquiry. The Ordnance Hospitals alone, during the period my attention was chiefly directed to, viz. from January 1793, to September 1797, furnished ample information respecting the nature of the epidemics of 1793, 4, 5, and 6, and sufficient proofs of their cause; but my enquiry was not confined to them, although the abilities, and judicious discrimination, of the ordnance surgeons were very satisfactory; I endeavoured to avail myself of the opportunities my station gave me, to derive further information from eminent and ingenious private practitioners, and men not professional, although capable of judicious observation. From these sources I have drawn up the following

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ing illustrations of imported infection during a period of four years. How far I have succeeded, it is not for me to determine : this, however, I may confidently adjudge—

——Si ficta loquor, neget ipse videndum

Se mihi ; fitque oculis lux ista novissima nostris.

Ovid Metam. l. 1.

CHAPTER I.

Martinico.

THE Island of Martinico, with respect to the salubrity of its atmosphere, may be divided into two portions; the unhealthy occupying nearly two-thirds of the whole extent. This, however, is to be understood of its coast chiefly; for the interior, although divided in a very singular manner, and possessed of features extremely picturesque, is not, from its height and rocky structure, subject to morbid exhalations, except such as proceed from the density of the woods in the more inaccessible, and, of course, least cultivated tracts. A line drawn across the island, nearly north and south, from the port and village of Trinité, to the little bay and village of Cas Pilote, will constitute the demarkation of health and sickness. All to the eastward of this line, including the finest and richest part of the island, possesses an atmosphere of the highest degree of purity. In this division, which is little more than one-third of the island, is situated the city of St. Pierre, which, although built, for the greatest part,

part, on a narrow plain, confined by the sea on one side, and by a high mountain on the other; and although consequently subject to great heats, is, notwithstanding, extremely healthy. Saint Pierre derives considerable advantages, however, from this situation, the greatest of which is, undoubtedly, the wonderful command of water it enjoys. Every street is washed by a large and rapid stream; and, at certain distances, there are reservoirs, constructed in the years 1772 and 1775, which furnish this indispensable necessary, in great and unceasing profusion. This city, thus happily circumstanced, has, however, frequently suffered by a malignant fever, the cause of which, except in a few instances of manifest importation, may be readily discovered in domestic neglect of cleanliness.

Almost the whole of the remaining two-thirds of the island has a coast marshy, and subject, from several tracts of surface as low as the sea, to inundation during the rainy season. This part of the island is deeply indented in many places; and although the bays thus formed afford a secure retreat for ships of every description, yet having an atmosphere little agitated by winds, the morbid effluvia arising from the marshes continue suspended, accumulate, and become infinitely more deleterious. This has been the state
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of Fort Royal bay, as far back as we have any records of the insalubrity of its atmosphere. “ La mer y est toujours calme ; mais ce lieu n’est pas en bon air, et les matelots y sont ordinairement pris de fièvres, qui pourtant ne sont pas fort dangereuses, puisqu’elles quittent le plus souvent en changeant de lieu ; ” an extraordinary reason for assigning little danger to fevers, arising from causes pregnant with the most fatal effects. Rochefort, speaking of the adjoining country, presents us with a disgusting, but very just representation of the effects of its air on the human constitution. “ Ces lieux étouffés sont aussi malsains, ceux qui y travaillent deviennent de mauvaise couleur, et les nouveaux venus, qui ne sont pas accoutumés à cet air, y gagent plutôt qu’ailleurs le mal d’estomac, qui est si commun en ces îles.* The bottom of the bay of Fort Royal is thus divided into several smaller bays, all of which are formed by flats of very considerable extent, and composed, without exception, of marshy ground. Beyond these flats the country suddenly rises into very high mountains, curiously diversified, as all the other mountains of Martinico are, by conical peaks, and volcanic mounds, distin-

* Histoire Naturelle et Morale des Iles Antilles, p. 17, ed. 1658. A work severely, but perhaps not altogether justly, handled by a contemporary, Du Tertre,

guished by the name of “ pitons ;” and the bays being by these shut in from the easterly and southeasterly winds, are subject to calms, heightening the pernicious quality of the exhalations tenfold. In one of these called “ les trois îlets bénits,” it has been a custom uniformly adopted by the admirals on the station, to secure the ships of their squadron during the hurricane months—a custom generally productive of much mischievous consequence. In the year 1795, the *Majestic*, 74, Admiral Sir John Laforey’s ship, whilst shut up in this “ gouffre de la mort,” as the French happily named it, lost, in seven weeks, 189 men. Pestilential infection, there is the best grounds for believing, had no doubt a considerable share in the production of so great a mortality. That very much, however, is to be attributed to the situation is evident, from an event which took place in Admiral Harvey’s ship, the *Prince of Wales*, during the hurricane months of 1796. During that period this ship lay at *Trois Îlets*, and lost, without any suspicion of infection, 97 men. During the hurricane months of 1797, this ship lay in the open bay off the town of *Fort Royal*, and fortunately escaped without the loss of a man. There is, however, much reason to believe, that these instances of mortality, have owed part of their cause to a want of exertion in

in putting in force regulations calculated for the prevention of disease; and this seems to be confirmed by the event of the hurricane months of 1798, in the same ship. During fifty days, viz. from the 22d of August to the 11th of October, the Prince of Wales lay at Trois Islets, and lost only five men. A comparison of this state of health, with the dreadful prevalence of the yellow remittent fever, during the same period, among the crews of the transports and merchantmen, laying in the carenage, leaves us no room to doubt that, however unsalubrious the air of "Trois Islets Benits" may be, that of the former is infinitely more so; and that in making choice of a sheltered situation during the hurricane months, the navy, and masters of private traders, should fix on the latter, as the least productive of mischief of the two. I may here observe, that an adventitious circumstance has contributed greatly to render the air of the carenage more unhealthy than it naturally is, although that was much more than sufficient to prevent traders from frequenting it. A number of small vessels, purchased in America, by government, during Sir John Laforey's command, and at the instigation, it is said, of Admiral Thomson, were brought into this harbour; and although the advantages to be derived from them, properly fitted out and

employed against the enemy's privateers, were manifest, yet they were left totally neglected. They have since become rotten; have sunk, and rendered nearly one-half of the carenage useless; and now most of them are covered with mud. This addition of miasm has made the carenage a sink of pestilence. The original expenditure of public money, in the purchase of these vessels, was enormous; but the loss the neglect of them has since occasioned to the nation, by the destruction of thousands of valuable lives, is incalculable.

The inhabitants of the little villages, situated in the unhealthy portion of Martinico, viz, Lamantin, Petit Bourg, Le trou au Chat, Riviere Salée, Cul de Sac Robert, &c. are uniformly subject to simple and double tertians, and irregular intermittents of other types, together with the formidable yellow remittent fever, during the months of May, June, July, August, September, and October; and are carried off by them, or languish out a wretched existence till the return of the dry season, when they recover their health in some measure, and remain tolerably well till the rainy season again sets in. The yellow and fallow complexions of these unhappy people bespeak the noxious air they breathe; and the short lives of the men constitute a still more forcible testimony. Why the women should be exempted from

from early old age, is a singular circumstance attached to these unhealthy situations, which I cannot account for. Men seldom exceed the 50th year, yet women reach the 80th, 90th, and 100th. Unhealthy, and almost pestilential, as these situations are, their inhabitants, descendants of the first settlers, with views confined to the spot of their nativity, and with manners parallel to their views; are attached to their marshes, and prefer them to the finest country on earth. Viewing this country in the morning, before the sun has penetrated through the fog, astonishment is excited that any human being can exist in it. The view is singular; between Fort Royal and Lamantin, and even further to the eastward, nothing is perceived, at an early hour, but the summits of hills, every other object lying hid under a vast expanse of dense white fleecy vapour: if a calm prevails, the fleecy atmosphere is immovable; but if the gentlest breeze springs up, an undulation takes place, and presently huge volumes accumulate, and slowly roll along, carrying their pestiferous miasms towards Fort Royal, or mingling them in the waters of its bay.

The R. P. Labat informs us, that in 1674, the ground which the town of Fort Royal occupied in his time, about 22 years after, was a marsh full of reeds, on the edge of which were a few

wretched houses, built for the purpose of storing the cargoes of the ships which took shelter in the carenage during the hurricane months; and that “ en 1695, on en voyait plusieurs de maçonnerie, que semblaient déjà menacer ruine, parceque tout la terrain que la ville occupe est un sable mouvant, où plus on creuse, moins on trouve de solidité.” Du Tertre confirms this, by saying that, in his time, about the middle of the 17th century, the only part inhabited was that now distinguished by the name of the carenage, the most sickly hole in the West Indies. It was not till after the restoration of the island, in the year 1763, the French seriously determined on endeavouring to render the situation of Fort Royal more healthy than it had hitherto been found. Before the year 1765, the greatest part of the plain on which the town now stands was a mere morass, with pools of stagnant water, in which wild ducks bred their young. About that time a canal was cut from the carenage to the river, with a view to drain off the water; the marshes and pools were filled up; and streets laid out and paved. The canal, however, was not completed when the revolutionary war in the island broke out, and put a stop to all improvement. It was found in this imperfect state by the British; and, unfortunately, the circumstances of the place, bad

bad as they naturally are, and imperfectly as exertions were made by the old French government to meliorate them, have been permitted to return to nearly their original state. The drains have been choaked by neglect; the canal gradually shallows by the accumulation of filth and soil; the gutters of the streets, instead of carrying off the superfluous moisture, have become the sources of noxious exhalations; and the forts, from inattention, are subject to all the evils proceeding from putrid effluvia. The consequences to the inhabitants, and in a more especial manner to the troops in garrison, and the sailors, have been, in the warmer months, extremely fatal; but not more so to the British than formerly to the French troops; for I have good authority for stating, that fully one-half of those annually sent from France to garrison Fort Royal, perished before the expiration of the year; and that their officers suffered in nearly the same proportion. I shall hereafter treat more particularly of the diseases which have produced this dreadful mortality; and only observe here, that, except in a few late instances, it appears these have originated in the endemic causes which so copiously abound in the town and neighbourhood of Fort Royal.

It may not be uninteresting to the European reader, to be presented with a faint outline of the

general appearance of Martinico, the chief seat of French colonial government in the West Indies; and to its inhabitants possessed of attractions not inferior to those of old France—the city of St. Pierre exhibiting a miniature of the gaiety, the dissipation, the vices of Paris; and an epitome of the manners and customs of most of the maritime large cities commercially connected with the West Indies. In an enquiry such as I am engaged in, no more can be proposed than a delineation of the features which have a relation to health and disease.

Martinico is extremely divided, and, next to St. Lucia, is more distinguished by the singular conical mountains, called by the French “pitons,” than any of the West India Islands. Like them, however, the Leeward or “Basse-terre” side is more remarkable for its mountains and gullies, than the Windward or “Cape-terre” side; but notwithstanding this uncommon irregularity of surface, the soil is, in many places, very productive. The appearance of the island from the sea is, in many respects, magnificent, bold, and beautiful; and, perhaps, few parts of the world exhibit a more interesting landscape than that which presents itself on entering the Bay of St. Pierre. Most other parts of the island may exhibit a contour, bold, or magnificent, or beautiful; but here
there

there is a "tout ensemble le plus ravissant." The great outlines of this view, are the three Pitons of Carbet on the right, Mont Pelée on the left, woody, or studded with beautifully arranged coffee plantations, and "Gros Morne" in the distance. The fore ground is a fine sheet of water, a large city extending along the shore for fully two miles, innumerable gardens, and a vast declivous surface lying between the two mountainous extremities, either occupied by sugar plantations, highly cultivated and ornamented with hedge rows and clumps of lofty trees, or diversified by a multitude of inequalities equally well cultivated, but more picturesquely disposed. In short, were the volcano of Mount Pelée as active as that of Vesuvius, the country around St. Pierre would not perhaps be considered, even in the eye of a connoisseur in picturesque beauty, as much inferior in effect, though less in scope, to that so much admired surrounding the Bay of Naples.

Nullus in orbe finus Baiis prælucet amænis.

The construction of Martinico, like that of all the other islands, Barbadoes, Antigua, and St. Croix, in some respects excepted, is argillaceous; but here somewhat differently disposed, and intermixed with substances peculiar to itself. The

subincumbent rock is a blue, or a gray granite, of that kind composed of shoërl, a little quartz, and much argillaceous stone. Large masses of this appear above the surface, in the channels torn by the autumnal torrents; and in many of the higher ridges, whose covering of clay-stone has been washed away, or corroded by the same cause. The deeper strata of this granite are solid, or have only waving fissures, like all of this order; but the more superficial become lamellated, and, in many instances, acquire more of the character of schistus. The argillaceous rock, which generally covers the granite beds, is either heterogeneous, and mixed with nodules of granite, or pure schistus, lamellated or shivery, and variously disposed; but chiefly vertical, or much inclined. I have met no where with lime-stone, or any stone which effervesces with the nitrous acid. In two places indeed, viz. along the S. W. shore, a little beyond St. Pierre, and near the centre of the island, in the vicinity of the three huge conical mountains, which distinguish Martinico so remarkably, called “Les Trois Pitons de Carbet,” an immense quantity of tufa, or a substance which exhibits every mark of being ferruminated ashes, is found. Thus, on the summits of the ridges, which decline from the Pitons towards the sea, this substance has become solid, and as strongly

conglutinated,

conglutinated, as free stone, and is spread over the surface in layers of various thickness, of various degrees of roughness, and generally mixed with innumerable nodules of foreign substances, which appear to have been originally of a much harder texture. The prevalent colours of this substance are yellow, or white, externally, and uniformly white internally. The ravines of Mont Pelée, which were probably at first fissures in stratified ashes, produced by volcanic eruptions and earthquakes, and afterwards widened by the successive commotions the mountain underwent, exhibit so singular an appearance, as to have obtained the name of "ravines blanches." On the surface, and intermixed with the white substance, a prodigious quantity of pumice-stones is every where found, so light as to float in fresh water. These ravines are very singularly disposed; winding in every direction, and leaving large masses of the ashes, thus ferruminated, insulated. Although this substance does not effervesce with the nitrous acid, it is, nevertheless, evidently a volcanic production, from the volcanic remains on the mountains, near or on the sides of which it is found.

Except the windward side, where the surface slopes gradually into plains of very considerable extent, and except the marshy tracts already described, which have been drained and cultivated, the

the soil of Martinico is far from being fertile; for although, in all the uncultivated tracts, immense woods, and a coarse tufty grass, cover the surface in a luxuriance most astonishing, yet where attempts have been made to raise useful plants, disappointment always follows, after the third year, unless the aid of manure is resorted to. Under a thin covering of vegetable mould, a sterile cohesive clay, or “terre grasse,” almost every where abounds.

Martinico and St. Lucia labour under an evil, which all the other islands, without exception, are happily exempted from. It is truly singular, that these two islands, from the first establishment of European colonies on them, should be remarkably infested with snakes, whose venom is of a most deadly nature. M. Rochefort testifies to the fatal consequences of the bite of these animals; but gives us no information respecting the cause of the limitation of so dreadful an evil. The authority of Du Tertre is generally considered as respectable; and by him it is said, that the tradition among the Indians assigned the origin of it to the revenge of a continental nation, for the cruelties exercised on them by the Caribees. “Quelques-uns d’entre-eux,” says he, “nous ont assuré, qu’ils tenoient par tradition très-certaine de leurs peres, que cela venait des Arroüaques,

Arroüaques,

Arroüaques, nation de la terre-ferme, aufquels les Karaïbes de nos ifles font un très-cruelle guerre. Ceux-là, difent-ils, fe voyant tourmentez et vexez par les continuelles incurfions des nôtres, s'avièrent d'une rufe de guerre non commune, mais extrêmement dommageable et périlleufe à leurs ennemis ; car ils amaffèrent grand nombre de ces ferpens, lesquels ils enfermerent dans des panniens et callebaffes, les apporterent dans l'ifle de la Martinique, et là leur donnerent liberté, afin que, fans fortir de leur terre, ils puffent par le moyen de ces funeftes animaux, leur faire une guerre immortelle."* Although the ifland has been much cleared fince Du Tertre's and Rochefort's time, the venomous fnakes are ftill extremely common ; often approach fo near the habitations of the inhabitants, as to be a moft ferious evil ; and daily instances of the deadly effect of their bite occur. There are, however, antidotes produced every where abundantly ; but the knowledge of them, which was firft introduced, we are told, by Rochefort, by fome families from Brazil who fettled here, is chiefly confined to the people of colour, and the negro-race, to whom, indeed, it is moft ufeul. There are, in every diftrict, negroes who, having acquired a real or pretended

* Hift. Gen. des Ant. tom. ii. p. 819.

knowledge of such plants as are said to possess an antidotal virtue, have assumed the name of “*pen-seurs*,” dressers of wounds. As mystery is probably the principal cause of their celebrity, it is almost impossible to discover the composition of their applications, for their antidotes are almost all external. One of the most esteemed is a compound of the exuviae of the snake, the leaves of the goat calabash (*cucurbita*, *foliis amplis muscum redolentibus*, *fl. albo fructu oblongo. plum.*), and those of a small species of the *passiflora*, reduced to a fine powder. The application of this powder is preceded by scarifying and rubbing the wound well with lime juice. Half a dram of the powder is given internally, after each dressing, mixed in taffia or rum. Besides this, two species of *aristolochia*, called “*lianne à serpent*,” or *trese*, are much valued—a watery infusion of the root of these, particularly the *trese*, is used. It is probably the same plant called by the Brafilians, “*caa-apia*,” with the juice of which, extracted by water, we are informed by Piso, they cure the wounds inflicted by poisoned arrows, as well as a species of serpent called *bojobi*. A more simple, and I am assured, a very effectual cure for the poison of the Martinico snakes, is the following. As soon after the injury has been received as possible, a tight ligature is passed above the

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the wound ; and a ripe lime cut in two, is rubbed on the part with considerable force, after which a compress soaked in lime-juice is applied to it. The lime-juice is also taken inwardly. On the same principle, by which we suppose this remedy effects a cure, the disengagement of oxygen, it is not unreasonable to believe that nitric acid, duly diluted, must have still greater efficacy.*

The

* The novelty of the subject may, perhaps, constitute an apology for this long digression—I am induced to trespass a little longer. In the month of February, 1798, I had an imperfect illustration of this conjecture. A free mulatto-man, named La Ran, was bit by one of the gray or brownish-gray snakes, early in the morning; and perceiving the usual effects fast approaching, he had immediate recourse to those applications he had been taught to consider as specific: but, as no penseur could be found, his own attempts to cure were too imperfect to effectually destroy, or prevent the absorption of the virus. Death, however, was not the immediate consequence; but the effects of the poison, on entering into the circulation, were alarming in the highest degree, particularly in the lungs. In a state of distress scarce describable, he in vain sent for French practitioners: at length, however, being in my neighbourhood, he applied to me for assistance. I went immediately to him, and found him almost suffocated, with an expression of melancholy and despair beyond description dreadful. The limb which had been bit had no uncommon appearance of disease in it. I drew blood from him until he was manifestly relieved; and, on my return home, sent a quart of diluted nitric acid, with directions to use it as frequently as possible, with the occasional addition of a teaspoonful of the camphorated tincture of opium. The blood drawn was remarkably black; but its appearance, after cooling, I could

The snakes of Martinico and St. Lucia are divided into two kinds; the one poisonous, the other perfectly harmless. The latter are remarkably timid, though, in many instances, from six to ten feet long. The French, from this circumstance, have distinguished them by the general name, "coureffes;" and they are known by their bellies being chequered black and white. The former are of two kinds, gray and yellow, and

could not ascertain. This remedy was carefully persevered in, and, on the second day, the fifth after the accident, the patient found himself considerably relieved; on the fourth day he was still better—and, in short, about a fortnight after the accident, La Ran was able to walk from his cottage to my house, although the distance was fully two miles. Although little decidedly in favour of oxygenating the system, in cases of animal poisons, can be drawn from this case, yet there is enough, I presume, to encourage future trials; and particularly when the danger, not being immediate, as in cases of bites of certain snakes, in hydrophobia, &c. time is given for the gradual disengagement of oxygene. The advantages to be derived from the discovery of the efficacy of diluted nitrous acid, as an antidote against the poison of snakes, were it sufficiently ascertained, are manifest. How easy would it be for the hunter, or the wood-cutter, to furnish himself with a small phial of pure nitrous acid, to be occasionally diluted when accident requires its antidotal aid. The application of the remedy to the wound, after dilating or scarifying it, may, perhaps, instantaneously deprive the virus of its venom, by producing a new combination destructive of its principle. Do those laws of irritability, ingeniously suggested by Dr. Girtanner, which relate to the operation of local stimuli (the venom of the snake) on the whole system, (depriving it of its oxygene or irritability) and to the means of obviating or counteracting their deleterious effects, meet, in this instance, an elucidation?

called

called "serpents." The gray, although the smallest, is considered the most dangerous: the yellow, or brownish yellow, is a hideous animal, and is much more common than the gray, frequenting fowl-houses, and wherever rats abound, the declared enemies of whom the whole tribe of snakes and serpents are. The poisonous kinds are further distinguished by large flat heads, wide throats, and the canulated poisonous fangs. The usual mode of distinction by the size and situation of the scales I neglected to attend to.

The island of Martinico is, perhaps, with the exception of St. Lucia, the most subject to rain of all the Antilles; nor is there so manifest a distinction of the seasons into wet and dry, as in all the others. A suspension of vegetation seems to take place indeed; but this is a providential respite, during which nature, in a great measure, ceases from her labour, and renovates her exhausted powers; not a privation or diminution of means to proceed on. During the year 1798, scarce three days successively occurred, without rain; and there are years so wet, as to produce a quantity of rain not much inferior to what has been observed on the uncultivated coasts of Africa. The torrents, on these occasions, carry every thing moveable along, and leave indelible traces of the dreadful ravages they commit. In one night, between
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the 7th and 8th of June, 1798, eight inches of rain fell; and the effects of the torrent, with little amplification, may be figured by the "*ruit arduus æther, &c.*" of Virgil. The quantity of rain which fell at the Ordnance Hospital, at Fort Royal, ascertained by a pluviometer, from the 1st of February to the 30th of September, amounted to 93 inches; but, as the remainder of the year was nearly as wet as these eight months, it may be fair to state the rain which fell during the year 1798, at 130 inches. Nor is Martinico remarkable for its moisture alone; thunder and lightning are infinitely more dreadful than in the other islands; and the temperature of its atmosphere is subject to greater variation. This peculiarity is more observed in marshy situations; and the chilliness which prevails during the night at Fort Royal, and the low grounds in its neighbourhood, produces the most unpleasant sensation imaginable. A debility of constitution is the invariable consequence; and when putrid animal effluvia, or contagion, has admission, the fever of infection which is produced, proceeds with more rapidity to a fatal termination. Thus, in 1794, the fever of infection, the malignant pestilential fever, which almost universally prevailed, swept away whole regiments, which then garrisoned Fort Royal, and whole crews of the ships

ships of war, and private vessels, which then lay in the carenage and bay; and thus, in 1796, the same disease, from the superinduction of the same causes of debility, proved almost equally destructive.

The temperature of the atmosphere, as indicated by the thermometer, does not observe the same regular changes, and remain stationary, after it has changed, as it does at Grenada. The heat and cold are extremely variable; the mercury from 80° suddenly sinking, on a little variation of the wind, to 76° , and even lower. I shall here insert the state of the thermometer during the years 1797, and 1798; and afterwards subjoin a general view of the state of the question respecting the Importation of infection, as far as it relates to Martinico, and as far as I have been enabled to extend my researches.

A TABLE shewing the greatest, least, and medium Height of the Thermometer, from May, 1797, to the 31st December, 1798, at Fort Royal, Martinico.

Months.		1797			1798		
		7 A. M.	1 P. M.	10 P. M.	7 A. M.	1 P. M.	10 P. M.
January	G.				76	83	
	L.				67	76	
	M.				74	80	
February	G.				77	84	
	L.				72	79	
	M.				74	82	
March	G.				74	81	75
	L.				71	74	70
	M.				72	77 $\frac{1}{2}$	72 $\frac{1}{2}$
April	G.				77	86	79
	L.				70	76	70
	M.				73 $\frac{1}{2}$	81	74 $\frac{1}{2}$
May	G.	80	86		78	86	80
	L.	78	80		72	74	74
	M.	79	84		75	80	77
June	G.	80	86		76	83	78
	L.	77	82		74	74	72
	M.	79	84		75	83 $\frac{1}{2}$	75
July	G.	81	86		76	85	78
	L.	78	83		74	72	76
	M.	80	84		75	78 $\frac{1}{2}$	77
August	G.	81	92		78	87	78
	L.	79	79		74	79	76
	M.	80	86		76	83	77
September	G.	80	92		78	86	76
	L.	78	83		73	73	72
	M.	79	87		75 $\frac{1}{2}$	84 $\frac{1}{2}$	74
October	G.	80	92		78	89	74
	L.	78	79		74	74	
	M.	79	87		76	81 $\frac{1}{2}$	
November	G.	79	88		78	88	78
	L.	75	81		72	74	72
	M.	77	86		75	81	75
December	G.	79	86			84	
	L.	74	77			78	
	M.	77	82			81	

Medium of nearly two years about 82.

I had given my opinion decidedly against the introduction of any foreign infection into the West India islands, at any period before the year 1793, when the Hankey disseminated that of the malignant pestilential fever in Grenada ; but since the publication of the first edition of my Essay on that subject, having consulted some French writers, and having looked into the accounts of the infancy of the different colonies, English as well as French, I have been induced to deviate a little from that opinion. It is reasonable indeed to believe, that, however contrary the fact may be to the received theory, which supposes an inaptitude of the intertropical atmosphere to retain infection, the foul air of ships, and the confined effluvia of morbid animal bodies in these ships, may be productive of diseases of a most malignant and pestilential nature. It is true that the heat of the tropical climate does not permit the diffusion of infection beyond a very limited space ; but it is equally true, that, within that space, it acts with a virulence not surpassed by the effluvia which proceeds from the body of a person labouring under pestilence or plague. The clothes and bedding used by the sick, retain this infection, and are as capable of diffusing it in a hot climate, as the persons of the sick, and as such fomites are observed to do in temperate and cold climates. The

chambers of the sick, and the cabins, steerages, and holds of ships retain the infection with equal certainty, and require as much the assiduous application of the means of eradication, as such places are found to do in the climates of the old continent. This is not simple assertion—it is a truth unhappily established by many melancholy facts, known to those who have witnessed the effects of retained infection within the tropics; and who have experienced the disastrous consequences of incredulity, and neglect of the necessary precautions. At no period have a greater multitude of verifications of this observation been obtruded on us, than during the present war; and a view of them justly and impartially exhibited, would afford a most instructive lesson to those who are entrusted with the equipment of fleets, and the organization of armies; providing the principal object of their exertion is to benefit their country. We are, therefore, less astonished when we read of the importation of disease, and the propagation of it afterwards by contagion, because we perceive the possibility of such an event, when the neglect of purifying and sweetening a ship after the prevalence of a fatal disease on board, and the scepticism of the inhabitants, contribute to the production of it.

The earliest account of any thing of this kind

I have

I have met with, in the West India islands, is contained in a French work published in 1658, twenty-three years after the colonization of Martinico, entituled “ Histoire Naturelle et Morale des Iles Antilles de l’Amérique.” It is written in a style and with an energy which do not discredit the talents of M. Rochefort, however unwilling Du Tertre and the Editors of the “ Histoire Générale de Voyages,” on his authority, seem to be to give him credit for his veracity. Rochefort says “ L’air de toutes ces îles est fort tempéré, et assez sain, quand on y est accoutumé. La peste y étoit autrefois inconnue, de même qu’en la Chine, et en quelques autres lieux de l’Orient. Mais il y a quelques années que la plupart de ces îles furent affligées de fièvres malignes, que les médecins tenoient pour contagieuses. Ce mauvais air y avoit été apporté par des navires que venoient de la côte d’Afrique ; mais aujourd’hui on n’entend plus parler de semblables maladies.”*

Unfortunately we are here presented with no circumstances which lead to a correct discrimination of the imported disease. We are, however, furnished with information more ample, and there is reason to believe much more authentic, of the pestilence thus loosely alluded to, in the “ Histoire Générale des Antilles habitées par les Fran-

* Rotterdam Ed. 4to. 1658, p. 2.

çois" of the R. P. Du Tertre. "Durant cette même année, 1648, s'ays he, la peste, jusqu'alors inconnue dans les îles, depuis qu'elles étoient habitées par les François, y (Guadaloupe) fut apportée par quelques navires; elle commença par Saint Christophe, et en dixhuit mois qu'elle y dura, elle emporta près du tiers des habitans. Cette peste appelée épidémie, causoit à ceux qui en étoient attaquez un mal de tête fort violent, une débilité générale de tous les membres, et un vomissement continuel, de sorte qu'en trois jours elle mettoit un homme au tombeau. Cet maladie contagieuse fut aussi apportée à la Guadaloupe par un navire de la Rochelle, appelée le Boeuf, dans lequel, notre supérieur le R. P. Armand de la Paix, ayant appris que plusieurs des passagers et des matelots mouroient sans confession, il exposa courageusement sa vie pour les servir. Il alla donc dans ce vaisseau, y administra les sacremens aux malades, et leur rendit tous les services qu'il pût; mais y ayant gagné la peste, il se préparoit déjà à mourir dans le navire, lorsqu'on l'en vint retirer pour assister les habitans de l'île, que cette contagion avoit aussi gagnez."* The authority of Ligon, a contemporary traveller, corroborates strongly this account;† and what

* Tom. i. p. 422.

† See Chapter on Barbadoes.

Du Tertre says on the endemic diseases of that early period, confirms it. “ Entre toutes les maladies dont les habitans de nos îles sont attaqués, il y en a qui sont communes avec celles de la France, et d’autres qui sont propres et particulieres à toutes ces îles, et aux terres qui sont exposées à une même température de l’air. Les fièvres intermittantes, les tierces, les double tierces, et les quotidiennes, attaquent pour l’ordinaire les nouveaux venus: si bien qu’il semble que soit une espèce de tribut qu’il faut payer en arrivant aux îles. L’on en est pourtant quitte à bon marché, puisque ces fièvres intermittantes n’excèdent guères quatre ou cinq accès, et elles sont d’autant moins dangereuses qu’elles prennent plus promptement; outre toutes ces fièvres intermittantes, l’on est aussi tourmenté des fièvres chauds continues, avec leur symptomes comme en France; mais il faut avouer que comme le pays est plus sain, elles y sont aussi plus rares.”* From this authority it appears, that the endemic fevers of the country and climate, then, were precisely what we find them at the present day; and that a pestilence was produced by a cause very different from the morbid causes peculiar to the climate. But when we consider the excessive crowd of passengers, composed chiefly of “ pauvres engagés pour trois ans, qui

* Tom. ii. p. 477.

n'ont pour l'ordinaire qu'une ou deux chemises," in the ships of those days; and the still more excessive filth with which they were incommoded, even to a degree we can scarce give credit to, "il (la vermine) s'en trouve enfin une si prodigieuse quantité que les cordages mêmes en sont remplis, et on les y voit monter à milliers comme des matelots;* our astonishment will be justly excited that pestilence should not be an almost constant attendant on their voyages. Probably it was on this consideration, that Dr. Mitchell, of New York, never losing sight of the endemic origin of morbid causes, makes the following comment on the passage from Rochefort quoted above, where the pestilential fevers of 1647 and 1648 are so vaguely and incorrectly stated. "The Europeans, the Doctor observes, as they colonized these islands, settled in unhealthy places, shunned by the wiser natives, or collected the materials of pestilential air, and manufactured from them deadly distempers in the spot."† It is also probable that Dr. Mitchell did not advert to the sentiments and statements of Rochefort's more accurate and more ingenuous rival Du Tertre.

* Ibid. tom. ii. p. 45.

† "Affinities and Relations of Septic (Nitric) or Pestilential Fluids to other Bodies," in a letter from Dr. Mitchell to Sir. J. Sinclair. Med. Rep. vol. ii. p. 351.

About the close of the last century, 1694, the celebrated dominican, Labat, entered on his mission to the Antilles. On his arrival at St. Pierre, an apprehension for his personal safety was excited by finding a malignant and pestilential fever raging generally in the city, and particularly in the convent of his order. “ Les civilités que j’eus reçut en arrivant m’auroient fait oublié tout-d’un-coup les fatigues et les dangers du voyage, si je n’eus été menacé d’un autre péril, dans le couvent même de mon ordre. Un religieux de cette maison étoit attaqué du *mal de Siam*, et l’on s’y efforçoit d’en arrêter la contagion.” Labat, with his accustomed accuracy and minuteness, has given a history of this formidable malady, which enables us to compare it with the endemic fever of the country, and to draw conclusions which militate strongly against the prevalent opinion that the “ *mal de Siam*” of Labat, the first writer who makes use of the expression, I believe, is the production of the climate, and only another name for the yellow remittent fever. “ Cette maladie, ainsi nommé, parcequ’elle étoit venu à la Martinique où elle faisoit de grands ravages depuis sept ou huit ans (from about 1688), *non de Siam, mais par un vaisseau qui en rapportoit les débris des établissemens de Merguy et de Bancoek, et qui avoit touché au Brésil où quelque*

gens

*gens de l'équipage l'avoient gagnée, étoit d'autant plus terrible qu'on n'en connoissoit encore, ni la nature, ni le remede. Les symptomes en étoient aussi variés que les tempéraments des malades. Ordinairement elle commençoit par un grand mal de tête et des reins, suivi tantôt d'une grosse fièvre, tantôt d'une fièvre interne, qui ne se manifestoit point au dehors. Souvent il survenoit un débordement de sang par tous les conduits du corps, et par les pores mêmes. A quelques-uns, il croissoit, sous les aisselles et aux aînes, des bubons pleins d'un sang caillé, noir et corrompu, ou remplis des vers. La mort arrivoit le six ou septieme jour. Quelquefois, sans autre présentiment qu'un léger mal de tête, on tomboit mort dans les rues, où l'on étoit à se promener pour prendre l'air ; et ceux qui étoient si cruellement surpris, avoient la chair noire et pourrie un quart d'heure après. Les Anglois, qu'on faisoit prisonniers pendant la guerre prirent cette redoutable maladie, et la portoient dans toutes leurs îles. Elle se communiqua de même chez les Espagnoles et les Hollandois."** The disease here described differs materially from the endemic yellow remittent,

* Histoire Générale de Voyages, tom. lix. p. 332. Not having the "Nouveaux Voyages aux Iles de l'Amérique" of Labat, by me, I have satisfied myself with this extract, which the reader will find is literally taken from the original.

and bears a striking affinity to the true plague, as well as to the malignant pestilential fever of 1793, &c.; and it merits our particular attention on that account, as well as because the description is drawn up by one we have no reason to suppose biassed by preconceived theory; by an eye-witness of, and a sufferer by its ravages. French medical writers, since the publication of the "Nouveaux Voyages," have almost uniformly, and evidently without investigation, conceived the fever described by Labat, to be the yellow remittent fever; and consequently applying to the latter the name which the former imported disease acquired from the country which it was supposed to have derived its origin from, have confounded the two together, and have been the cause of the misconception, in this respect, we meet with in English medical writers on the fevers of the West Indies. Thus M. Chevalier, in his letter to M. de Jean on the diseases of St. Domingo, says "Presque tous les blancs qui arrivent dans l'île, non seulement d'Europe, mais encore des îles voisines, et du continent de l'Amérique, sont attaqués peu de tems après d'une fièvre maligne, que *l'on appelloit autrefois maladie de Siam* : on lui donna ce nom, parcequ'elle comença, dit-on, dans la Martinique peu de jours après l'arrivée d'un bâtiment, *chargé de marchandises*

difes (a gross error) que venoient de ce royaume ; et de la Martinique, elle se communiqua bientôt à St. Domingue." Strange that the "fièvre maligne" which M. Chevalier met with should not be contagious, and yet the descendant of the formidable and infectious "mal de Siam." But it is evident his information was mere hear-say ; otherwise he would have known that the disease was not imported from the abandoned settlements of Merguy and Bancoek, in the kingdom of Siam, but probably generated on board the vessel crowded with the colonists, banished on the ruin of the interests of their patron, Phaulcon, during a tedious voyage, and having perhaps the superaddition to disappointment and a long train of depressing circumstances, the seeds of an infection received during their detention at Brasil.*

The

* The Abbé Reynal gives the following concise account of the destruction of the French interest at the court of Siam. "Les François ne s'occupèrent point de ces objets (de commerce) les facteurs de la compagnie, les officiers, les troupes, les Jésuites n'entendoient rien au commerce, et ne songeoient qu'aux conversions, et à se rendre les maîtres. Enfin, après avoir mal-secouru Phaulcon au moment où il vouloit exécuter ses desseins, ils furent entraîné dans sa chute, et les forteresses de Merguy et de Bancoek défendues par des garnisons Françaises furent reprises par le plus lâche de tous les peuples." Histoire Philosophique et Politique, tom. ii. p. 37. These establishments were made in consequence of an embassy to Louis XIV. sent at the instance of Phaulcon, a Greek, Prime

The accurate Desportes seems to have fallen into the same error, and has committed himself by a false statement of the fact. He thus shews his inconsistency and want of information. “ La maladie de Siam doit-être regardée comme *une fièvre putride, maligne et pestilentielle*. On a ignoré pendant long-tems les funestes effets de cette maladie dans les îles ; la régularité avec laquelle elle se reproduit, semble devoir la faire regarder comme une de ces maladies dont *il faut chercher la cause dans la constitution de l’air*. Le premier événement qui l’ait fait remarquer, a été la relâche, à la Martinique, *d’une nombreuse escadre qui venoit de Siam, et dont l’équipage, pendant son séjour dans cette colonie fut affligé d’une fièvre maligne ou pestilentielle, qui fit périr un grand nombre de matelots.*” * M. Poissonnier Desperières, profiting, perhaps, by the mistakes of his predecessors, or convinced by investigation that the endemic fever of the country differed widely from the imported disease described by Labat, does not even mention the name “ maladie de Siam,” in his “ *Théorie Raisonnée de la Fièvre de St. Domingue ;*” but very properly informs us, that the

Prime Minister to the King of Siam. Reynal happily observes that, “ La vanité fastueuse de Louis XIV. tira une grande partie de cette embassade.” p. 31.

* Histoire des Maladies de St. Domingue, tom. i. p. 191.

diseases most frequent and most violent in that island, are the “ *vraie fièvre ardente ou le vrai caufos d’Hippocrate,*” and “ *une fièvre ardente bâtarde ;*” or the yellow and simple, or common remittent fevers.* From misconception similar to that of Chevalier and Desportes, the English writers, on the diseases of the West Indies, with only one or two exceptions, mention the Siamese origin of the yellow remittent fever: and Dr. James Lind, whose acuteness is universally acknowledged, resting upon the supposition that the “ *mal de Siam*” or infectious and pestilential fever imported into Martinico about the year 1688, was precisely the same as the yellow remittent of the West Indies, and, indeed, of all hot and marshy or uncultivated countries, thus expresses himself. “ This fever was once supposed to have been first carried into the West Indies by a ship from Siam: an opinion truly chimerical; as similar diseases have made their appearance, not only in the East Indies, but in some of the southern parts of Europe, during a season when the air was intensely hot and unwholesome.”†

Upon the whole I am inclined to think, that the foregoing considerations leave little room to

* *Traité des Fièvres de l’Isle de St. Domingue*, p. 1—90.

† *Diseases of Hot Climates*, p. 130.

doubt that the fever, improperly denominated the “mal de Siam,” derived its origin from the usual source of pestilential diseases; that it prevailed with unabated virulence for a certain length of time, not exceeding ten years; and that, like all epidemic pestilential fevers, it gradually disappeared, till at length the contagion totally ceased of itself. Whether what I have offered on the subject may tend to the impression of similar conviction on the mind of my reader, I know not; it is sufficient for me that I have laid before him the train of facts, and reasoning thence resulting, which have urged me to think as I do.

We have no record of any imported infection into the West India islands, from the time of Labat until that of Warren; and it rests on that writer's authority alone, as far as I know, that the infection of the plague was introduced into Martinico three different times from Marseilles, during a period of less than twenty years. The passage of Dr. Warren's “Treatise of the Malignant Fever in Barbadoes” which relates these events, is extremely confused, and furnishes little room for trusting to the author's veracity. He certainly practised at Barbadoes in 1739, for in that year he there addresses his dedication to Dr. Mead: now the pestilential fever was twice imported into Barbadoes from Martinico, by his
account,

account, during the preceding sixteen years; the first above fifteen years, and continued to rage for two years, consequently about the year 1724; the second, he expressly says, took place in 1733; and on the information of “a gentleman of understanding and veracity, who at that time resided at Martinique,” he adds, that it was a third time imported, only a few months after the second, although the second in that short time had disappeared. As I shall have occasion to quote this writer again, I shall only here observe, that there are grounds of belief that no such event took place, because 1st, All the French medical writers I have had an opportunity to consult, are totally silent on the subject; and 2d, Dr. Towne, who practised at Barbadoes nearly about the period in question, Dr. Hillary, and Mr. Hughes, speak only of the yellow or ardent bilious remittent fever, without assigning any thing of a pestilential nature to it.

I have consulted several of the French medical practitioners of the present day, resident in Martinico, but have obtained no information meriting the smallest attention, nor confidence on this subject. Without the ability, or without the inclination to discriminate, they, with one accord, cite the hackneyed but unfounded *tradition*, of the importation of disease from Siam, without
referring

referring to, and without knowing the fact related by Labat; nor have they hesitated in forming their indeterminate opinion, that the “*maladie de Siam*” has been the prevalent epidemic till about twenty years ago. The French practitioners of the torrid zone of the Western world, with few exceptions, like too many of our own countrymen, I am sorry to say, have, from apathy and prescription, lost the habit, as well as the power of discrimination; and satisfying themselves with the names of diseases, found their practice on that irrational, and, I may well add, baseless fabric; little solicitous whether recovery or death may be the result. I shall, at the close of this chapter, lay before the reader a specimen of Martinico French medical information, and leave him to judge for himself.

A period of fifty-four years, from 1739 to 1793, offers nothing authentic, or even conjectural, relative to imported infection. It appears, from what I have already advanced, (Part I. Chap. VI.) that the infection of the Philadelphia pestilence of 1793 was introduced into Martinico some time in the month of October of that year. A French medical gentleman of high estimation then, as well as now, resident in St. Pierre, and considered as the practitioner of the greatest emi-

nence and ability in the island, M. D'Arifte, has confirmed this opinion. This gentleman's account of this epidemic is very satisfactory: he favoured me with it in the presence of an ingenious and intelligent gentleman of the General Hospital staff, Mr. Tooky, at St. Pierre. Late in the year 1793, or about three months after the pestilential fever appeared at Philadelphia, an American vessel, the name of which he did not know, arrived in the road of St. Pierre, from that city, with that disease on board. From this vessel the infection was immediately communicated to others, and, in the course of six months, spread with such astonishing rapidity and violence, that scarce any American, and there were a prodigious number in port at the time, escaped it, and of those attacked, in his practice, only ten recovered. These appeared to have owed their recovery to the eruption and suppuration of two pestilential carbuncles on the testicles. The character of this fever was totally different from that called the yellow fever (double tierce), and was distinguished by the name of malignant fever (*fièvre maligne*). The description given to me of it by M. D'Arifte, corresponds so exactly with that of the malignant pestilential fever, as to leave no doubt of their being the same disease.

The

The fever carried off the patient generally in three or five days, and, as M. D'Arifte observed, deprived medicine of all its resources (*eût depouillée la médecine de toutes ses ressources*), by the wonderful rapidity of its course. A curious circumstance, mentioned by M. D'Arifte, is, that the fever seemed to be exclusively confined to the Americans; for not one of the French inhabitants was seized with it, and none of the "Acclimatés" suffered at that time by any fever, except the yellow fever (*fièvre jaune ou double tierce*); which, he says, every year more or less prevails. The mode of treatment was such, as removes much of our astonishment at the prodigious fatality of the fever. The French physicians, and there were no other at Martinico at that time, generally began with bleeding, and, during the phlogistic state, administered cooling ptisans, and laxative clysters. When the low state (*assoupissement*) came on, they depended altogether on the bark and the mineral acids. At the time this dreadful malady broke out, the colony was so agitated, by internal commotions, that few observations could be recorded respecting it: but M. D'Arifte had not the smallest hesitation in assuring me, that the particulars here stated are strictly true, and that, however opposite it may

be to the opinion of many of the American physicians, not a doubt can be entertained, that a fever of a truly pestilential nature was imported from Philadelphia about the middle of October, 1793, differing most essentially from the yellow remitting fever (*fièvre jaune ou double tierce*) of the country. Buboes and carbuncles were very common, but becoming gangrenous, always constituted an unfavourable prognostic. M. D'Ariste further added, that from the consideration of the two cases in which recovery took place from the suppuration of carbuncles on the testicles, he would, without hesitation, create artificial carbuncles by means of the actual cautery, and he thinks the patient might be saved by that means. The foregoing are the material points of a conversation with M. D'Ariste on the subject. He promised to favour me with a more particular account, when he should have more leisure to commit his thoughts to paper.

This dreadful scourge was communicated to the seamen of the ships of war, and to the troops composing the army of Sir Charles Grey, after the surrender of the island in 1794, by the American vessels which were then in the bay of St. Pierre, and harbour of Fort Royal. The ravages it committed were truly alarming. Mr. Young,
surgeon

surgeon of the Vengeance 74, which formed part of the convoy to the July fleet of 1794, informed me, that in one week seventy men were thrown overboard, who had fallen sacrifices to the pestilential malignity of this dreadful malady. Dr. Gilpin, who then attended the hospitals as physician on the staff, and who, by a very long residence in the West Indies, during which he practised very extensively, with equal credit to himself, and benefit to his patients; and more particularly by a knowledge of the pestilential fever introduced into Grenada the preceding year, was fully able to discriminate between the yellow remittent of the country, and the imported pestilence; removed every doubt of the pestilential nature of that which raged among the troops, by a general description of it, and by several particular instances of contagion, which he very obligingly favoured me with at that time. The information of these gentlemen was strengthened by that of several others.

During the year 1795 the disease having expended its wrath on the army which had arrived the year before, and very few new troops having been sent out, seldom appeared. Instances of its presence were not wanting, however; and the following which Dr. Davidson, then on the hos-

pital staff, related to me, is a remarkable one. "About the month of November, 1795, the transport ship Raikes, Captain Newton, which had arrived the preceding month from England, with a healthy crew, lay at anchor in the open bay of Fort Royal, at a sufficient distance from all marshes. At this time the yellow fever raged with peculiar malignity and fatality on board the Majestic 74, flag-ship, at Trois Ilets, the usual station for ships of war during the hurricane months. The George cutter, tender to the above ship, having occasion for some articles out of the Raikes, anchored close along-side. Amongst others belonging to the tender, who went on board, was the cook upon a visit to his brother officer, the cook of the Raikes. A few days afterwards I was sent for, to see the cook of the Raikes, and another seamen, both ill of the yellow fever, which immediately spread through the vessel, and scarcely any escaped an attack. Lieutenant Jones, of the George, informed me, that his cook was also taken very ill; and that he lost, nearly about the same time, several of his people who had been spared to him from the Majestic. It appeared that the matter of contagion had adhered to the clothes of the cutter's people, who had so lately quitted the Majestic."

The

The fever seems to have disappeared altogether, till the month of June 1796, when three ordnance store-ships, amongst which was the Harmony already mentioned, and the General Elliot Indiaman, employed as a transport, again introduced the infection. The mortality produced by it was fully equal to that of any preceding period. No plague could have exceeded in destructive prevalence—seamen, troops, and inhabitants, equally suffered by it. In the ordnance department, death was almost universally the consequence of an attack of the malignant pestilential fever. Of 367 artillery, stationed at Fort Royal, 129 died. It was distinguished by carbuncles and buboes; and, in some instances, no less than thirty of the former have appeared on different parts of the body. The rapidity and violence of the disease were certainly principal causes of the dreadful mortality which took place; but it is equally certain, that injudicious practice, the want of proper attention to the sick, and, above all, a total want of judgment in the administration of calomel, contributed greatly to the production of it. Considering the purgative effect of calomel as the only one to be expected or wished for, from it, large quantities always mixed with jalap were given; no action on the

salivary glands could be excited, but an hypercatharsis coming on, the patient sunk under a discharge which nothing could check.

Since the month of January, 1797, the malignant pestilential fever has not made its appearance at Fort Royal. At St. Pierre, one or two instances of imported infection are said to have taken place in the course of the year 1798; but the circumstances were so obscure, and the information in general so vague, as to render the whole undeserving of credit.

The prevalence of the yellow remittent fever, at a certain period of the year, at Fort Royal, should not excite surprize, the cause being so abundant in its neighbourhood. That part of the city of St Pierre, called the Mouillage, being very low and moist, although not marshy, is also subject to this destructive fever during the same period, the hotter months. It is not necessary to say any thing on it here; but, as a remarkable illustration of the theory of the remote cause of the yellow remittent fever took place in the month of May, 1798, I shall take this occasion to lay it before the reader. The first cases of this fever occurred in the corps of artillery stationed in Fort Edward, situated on the peninsular rocky eminence which separates the bay, or road, of
Fort

Fort Royal from the carenage. A soldier and his wife, who first were attacked, were lodged in a quarter of the fort allotted to the accommodation of the royal military artificers, called the red barrack, which, except in having two open tanks or ponds of mason-work, built by the French, for the reception of rain-water, and being somewhat more confined, and consequently hotter, differs in no respect from any other part of that fortress. It has, however, been uniformly remarked as the most unhealthy quarter, and this want of health has been observed to be in proportion to the proximity of the tanks. On a minute enquiry and examination of the place, I found that the tanks had never been cleaned out since the island had been in the possession of the British, and probably not for a considerable time before; that the rain-water, which is conveyed into them by spouts, has no outlet whatever; that after a tract of dry weather, the surface of the water is covered with green vegetable matter; and that when it is agitated by any thing falling into it, a most offensive smell instantly arises, and continues to do so for a considerable time afterwards. The unhealthy vapour, or effluvia, is most abundant after long continued dry weather, interrupted only by slight showers, when the rain serves

serves to agitate the stagnant water. The houses immediately adjoining proved fatal to many, particularly women, whose residence was more uninterrupted than that of the men. This history, corresponding with the circumstances of the weather for some time before, seemed to preclude a doubt of the cause of the yellow remittent fever which at this time began to appear. Soon after the disease began to appear in another part of the fort, inhabited by the principal body of artillery. Here some of the barracks are situated under a wall built against a high bank to support the earth; and through it there is a continual percolation of water, which lodges beneath the floor of the barrack. The quarter has been noted as an unhealthy one, and many unfortunate females have fallen victims to it. Here the extrication of hydro-carbonic gas, may well be considered as the cause of the sickness which took place. This cause continuing to act until such time as the corps of artillery were moved to a more healthy situation in Fort George (Bourbon) early in June, about sixty were seized with the yellow remittent fever. That this was the peculiar cause of disease, in the present instance, is rendered still more certain, by the disease being confined to the two situations I have described,

all

all the rest of the garrison exposed in common with the artillery to the effluvia of the marshes, the general source of disease at Fort Royal, having been perfectly healthy.

The following is the specimen of French Martinico medical information I have alluded to. M. L'Estrade had had, for many years, the most extensive practice in the French military hospitals. He had long retired from business, and enjoyed the confidence, the respect, and esteem, of a numerous circle of friends and acquaintance. This gentleman, at the request of a friend, politely endeavoured to satisfy my curiosity, by committing to paper the result of his experience. I now present it to the reader, to be collated with what I have already advanced on the subject.

“ On désigne particulièrement sous le nom de fièvre jaune une maladie accompagnée de symptômes étrangers ; et qui dépend presque toujours une teinte jaune sur toute la surface du corps. Cette maladie, que je caractérise fièvre maligne pernicieuse, n'a été bien connue dans cette île qu'à l'époque de la guerre de 1780. Je ne la crois pas endémique, elle n'était pas connue ici en 1763. C'était alors la Maladie de Siam qui exerçait ses ravages parmi les habitants ; j'ai vu s'éteindre peu-à-peu ce fléau meurtrier qui n'existe plus

plus depuis environ 20 ans ; ce fut une vaisseau venante de Siam qui vint mouiller à St. Pierre, et y répandit ce funeste poison. Quelques années après parurent les fièvres jaunes qui augmentèrent peu-à-peu dans la classe de peuple. La guerre parvint, et nos hôpitaux militaires en furent inondés. Quelques efforts que l'on ait fait pendant les premières années de la guerre pour dissiper les ténèbres épaisses dont cette maladie était couverte, on ne peut y parvenir : il semblait qu'un pouvoir délétaire détruisait en vingt-quatre heures tous les refforts d'où dépendent la vie et la mouvement. Elle faisait le désespoir des médecins, dont toutes les tentatives se bornaient à en guérir quelques uns. Nous fumes cependant après trois ou quatre ans dédommagés des vains efforts que nous avions fait pour pénétrer des causes si obscures. Soit en saisissant mieux la maladie, soit par un meilleur choix des moyens de guérison, soit enfin par l'affaiblissement de la contagion, nous parvîmes donc enfin à notre grande satisfaction à guérir quelques malades. Ces succès se continrent, et furent pris heureux dans la suite. On peut s'appercevoir aujourd'hui qu'elle est infiniment modifiée, et qu'elle s'affoiblira aussi que toutes les maladies contagieuses que nous viennent d'ailleurs. Je ne doute point celle-ci

ne

ne soit dans ce cas-là. J'adopte cette opinion avec d'autant plus de confiance, qu'il semble que le tems lui a imprimé la marche de toutes les maladies contagieuses qui commencent vivement, s'affoiblissent par degrés et finissent par s'éteindre. Je laisse à ceux qui ont suivi le cours de cette terrible maladie avec plus de pénétration que moi, de prononcer sur sa source, et sur les ressources qu'on peut tirer de notre art.

L'ESTRADE,

*Ancien Médecin du Roi, et de l'Hôpital
Militaire de la Guerre.*

Au Fort Royal Ile Martinique

le 18 Octobre, 1798.

CHAPTER II.

Saint Lucia.

THE Editors of the *Histoire Générale des Voyages* inform us, that before the year 1637 or 1638, neither the French nor English had any intention of establishing a colony on this island; and speaking of its atmosphere as it relates to health, they present us with an opinion, certainly not founded on experience; “on y croit, say they, l’air fort pur et fort sain parcequ’ayant si peu de largeur, et ses montagnes n’étant pas assez hauts, pour arrêter les vents de l’est, qui ne cessent guères d’y souffler, la chaleur n’y est presque jamais excessive.”* However favoured the French may conceive St. Lucia to be by nature; and however contested the possession of it has consequently been, by the English and French, it is, nevertheless, a melancholy truth that it has ever been the grave of the former. An opinion indeed has generally prevailed among the French of the West India islands, but whence it

* Tom. lix. p. 462---4

originated I know not, that this island is not only happily situated for commercial purposes, but possessed of a temperature and a salubrity, entitling it to the denomination of the West India Montpellier. So singular an opinion, which is supported neither by the reiterated experience of the British, nor by the disposition of its surface, nor even by the aspect of the French inhabitants themselves, has been, I suspect, the result rather of interested views, than the pleasing feeling of superior health. There are Frenchmen, however, who have candour to represent the state of the island as it is: among these is M. Poissonnier, who, whilst he states the unwholesomeness of St. Lucia, very justly assigns the cause, and proposes the remedy. “ Ce que l’on éprouve à St. Lucie et dans quelques autres îles sous le vent, fournit une preuve de mon système. Quoique de petite étendue, elles sont très-meurtrières pour les Européens, parcequ’elles sont encore couvertes de bois qui ralentissent toujours et qui anéantissent même quelquefois la vitesse des vents de mer, et par conséquent s’opposent à leur effet salutaire; mais si elles étoient découvertes, et si l’on procuroit de l’écoulement aux eaux des marais qui s’y trouvent, j’ose dire que le climat deviendrait sain par un suite de l’action libre des vents de mer.”*

* Tom. ii. p. 391.

The great cause of the sickness which annually prevails in St. Lucia, is marsh effluvia, and the moist exhalations from the immense forests which almost every where, particularly on the leeward side, cover the surface. No country can be more singularly divided; but the vallies are narrowed into gullies; the streams which rush down with inconceivable impetuosity, carry with them immense quantities of soil, which on meeting the smallest obstruction, accumulate and form an impenetrable barrier on the coast, within which the water stagnates and becomes a marsh. The mountainous and universally wooded surface, by attracting the clouds which continually envelope the island, constitute a never failing supply of water. The rain pouring down in torrents and stagnating after reaching the confined plains near the sea, furnishes ample materials for the most pernicious exhalations. Unfortunately the situations considered as the most capable of defence, and consequently chosen as the military posts, are the most subject to the action of these morbid exhalations. Were the remedy proposed by M. Poissonnier applied, the protection of the island might happily be made compatible with the health of the troops. But the last consideration seems to have been at all times unimportant, if a conclusion may be drawn from the total neglect
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of the means of obtaining this object. Morne Fortunée, the principal post, has the extensive marsh of the Grand Cul de Sac immediately to windward; its dependencies are either similarly exposed, or embosomed in woods; the town of Castries is built on a mangrove swamp, very imperfectly drained, or very partially filled up; and the Vigée, apparently a healthy situation, is separated from the main land by a marshy isthmus, the effluvia of which are blown over it by the prevailing winds. Thus surrounded by marshes exhaling effluvia the most pernicious imaginable, or embosomed in thick woods generating vapours little less deleterious, Morne Fortunée, Castries, the Vigée, and the dependant posts may be considered as the seat or throne of miasm, around which

Luctus, et ultrices posuere cubilia curæ:

Pallentesque habitant morbi

Terribiles visu formæ.

The out-posts being almost similarly circumstanced, are almost equally unhealthy. They differ materially, however, from Morne Fortunée, in having a soil cultivated, and less loaded with forests; in marshes they equally abound. The Soufriere, distinguished by the neighbouring Solfaterra, is, in some respects, an exception; and here, something like health may be seen, and has been

been enjoyed by troops whose fortunate lot it was to be stationed at it.

One of the distinguishing features of the St. Lucia scenery, is the immense groupes of conical hills every where towering, and surrounding a central semi-elliptic huge mass of mountain called the Sorcier. It is a true volcanic country, and exhibits a much more perfect specimen of the progress of volcanic accretions than any other of the West India islands. So whimsically and grotesquely, in many instances, are the hills accumulated on each other in the view from Morne Fortunée, that a wag, not over-scrupulous in his religious tenets, and little given to philosophical reflection, exclaimed on contemplating it, "G—should have been confined to a madhouse when he created St. Lucia." The northern and eastern districts of the island, whilst they display an equally whimsical disposition and figure of mountain, present an appearance of cultivation, and a greater extent of plain, which heighten the beauty of the landscape, and relieve the mind from the horrors the view of the leeward side impresses on it. This may be considered as the prevailing character of the country lying between the Grand Savannah and Vieux Fort, and from thence to Soufriere.

The diseases which have so frequently destroyed
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our troops on St. Lucia, are those which always proceed from marsh miasmata, and the humid exhalations of woody and uncultivated countries. The formidable yellow remittent fever in its most fatal form, the common remittent, every possible type of intermittent, and very generally accompanied with visceral inflammation and glandular obstruction; hepatic affections and dysenteries. The ravages of these diseases obliged the remains of the earlier British colonists to abandon the island in the year 1666, after possessing it, at different periods, from 1639. It appears from Du Tertre (tom. iii. p. 86 and 244), that of 1500 English who took possession of this island in June, 1664, only 89 remained in January, 1666, the remainder having been destroyed chiefly by disease. Their alarming prevalence, their characteristic symptoms, and their fatal consequences during the period of last war the British had possession of St. Lucia, are judiciously related by Dr. Rollo. They have been distinguished during the present war, with features equally formidable, and with an event still more fatal. Infection, however, had no share in the production of the diseases which so fatally prevailed. What happened previous to the second reduction of the island I am perfectly acquainted with; that mortality had extensively taken place is too well as-

certained by the miserable remains of the garrison at the time the evacuation of Morne Fortunée was found necessary. Of the regiments which composed the garrison only 300 men were able to bear arms; and sixty sick were left to the clemency of a brigand enemy. From the beginning of June, 1796, till the present time, it has been incontestibly proved that no infection had been imported; and indeed whilst that was possible from the islands where a fever of infection prevailed, no intercourse was permitted, nor commerce of any description sanctioned. A very ingenious and skilful medical gentleman, Mr. Allan, who had the charge of the sick of the ordnance department on the island, thus stated the result of his observations on this subject in his report to me, dated March 7th, 1798. "I have little hesitation in stating, that no suspicion of the importation of contagion within the period mentioned was entertained by any one, nor indeed did the circumstances immediately consequent on the surrender of the island in 1796, permit any such supposition. Had contagion existed, it must have operated in a peculiar degree, and in a most decisive manner in the Ordnance Hospital, in 1796, from obvious circumstances." Marsh miasm was certainly the prevailing, perhaps the only morbid cause; and it is curious to observe that

that in proportion as the troops were elevated above the marshes, or even above the surface of the earth ; in other words, as the effluvia or miasmata were more diffused, or less combined with the carbonic acid, the men were more healthy. Among the facts related by Mr. Allan in support of this position, the following is singular : “ Two detachments of foreign artillery, composed of men draughted from Lewenstein’s, and the Royal Etrangers, occupied the same barrack from the time of their arrival in March, 1797. At first, as usual at that time of the year, they were healthy, but having towards the end of August and beginning of September, lost a few men, their officer, M. D’Esteber, obtained part of an *upper story* in a barrack near the parade, to which, on September 15th, he marched such of his men as were not then in the general hospital. As the latter were dismissed, they went into this quarter. Not an instance occurred, I believe, of their being again sick, though in the middle of the sickly season. On November 1st, there was only one man remaining in the hospital, who I think was left behind when the whole party quitted the island, in December following.” On the other hand, he says, not a man of those employed on guard at Castries, escaped a most violent attack of the yellow remittent fever, and few escaped with life.

Of concurring causes of sickness, he mentions some which certainly might have been avoided, or palliated at least; and the commissaries, on whose attention and disinterestedness this depended, merit the severest punishment which the laws of their injured country can inflict; a country which has most amply granted means, the application of which has unhappily been perverted from their proper object, to the private emolument of rapacious men, unwisely or interestedly placed in offices of the highest importance. The badness of the rum issued to the soldiers, for instance, is a subject of universal complaint, and the irregular manner of issuing the weekly allowance only increases the evil; and the practice of feeding our armies entirely with salt provisions has also incurred the censure of every thinking man. The scarcity of vinegar in the commissaries stores is an evil which never can be too much reprobated, as the want of it is highly unfavourable to the health of soldiers, particularly in circumstances which render the raising or purchasing of vegetables impracticable." The enormity of these evils is greatly heightened by the consideration that "from August till December, 1796, the words of the Indian historian, are not too energetic to express to those who fortunately witnessed not the ravages of disease, for then, indeed,

indeed, "death dwelt in the water, and poison in the breeze."

As the yellow remittent fever prevailed more at St. Lucia than at any other island, and as the result of medical practice, conducted with judgment, in the treatment of it, may be consequently more valuable, I shall briefly state that which Mr. Allan, on whose veracity and ability every dependence may be placed, has reported to me. Purging with calomel combined with extract of colocynth, in the form of pills, was always necessary in the beginning. Bleeding, except to a very limited extent, and on the first accession of the phlogistic symptoms, was highly injurious; magnesia and lime juice taken alternately were more beneficial than any other means employed for removing irritability of stomach and obviating costiveness; blistering afforded only a momentary relief; antimonials were exceptionable, and generally inadmissible. He was confirmed in the opinion a celebrated army physician gave him on his entering into the service, viz. "that he would find the bark a valuable remedy in the fevers of the West Indies, but that he must frequently call to its aid the use of mercury; and that without this he would not be generally successful." Shaving the head and bathing the bare scalp with cold water and lime juice, effectually

relieved headach and delirium. On the use of mercury he thus speaks : “ From the description given above of the rapidity with which the progress of the fatal symptoms was marked, the same caution in the gradual exhibition of mercury, could not be observed. In every case then where this was apprehended, the mercury was given in doses of eight or ten grains, repeated every second or third hour, and in powder ; and whenever the mouth became affected, then, and not till then, in most cases, did a favourable change take place. This is a point on which, from repeated experience, I cannot entertain a doubt, and indeed the fact was so obvious as not to escape the observation of the sick themselves.” Cold bathing, in quickening the action of the mercury on the mouth, he found to be the invariable consequence of its application ; and wine and other cordials, were scarcely admissible except during convalescence. With such powerful remedies, and after this declaration of the successful exhibition of them, what was the cause of so great a mortality ? The answer is obvious : the continual presence of the remote cause, and the imperfect means of re-establishing health, excited relapses, and changes of disease, which proved, of course, more fatal than the original disease. Oppressed with so many discouraging circumstances,

circumstances, Mr. Allan's merit appears the more conspicuous; for in his practice a mortality took place of no more than about 1 in 7.

Had the same care, the same exertion of humanity, the same laborious professional application, the same or an adequate extension of common comforts, to the sick, been employed in the other departments of the St. Lucia army, much of the shocking mortality which took place might, doubtless, have been prevented. The different regiments composing the St. Lucia garrison on the 4th June, 1796, amounted to about 4278 men. On the 1st July, 1797, little more than 1000 remained; consequently, in one year, considerably more than 3000 died. What were the causes of so great a loss? Not the climate alone, for we see that it was possible to save six out of seven, whereas here only one out of three survived. It is with concern I am obliged, after a minute enquiry, to attribute it to the most cruel inhumanity, and the most marked inattention. The following melancholy picture will prove this. It rests not on the authority of the gentleman alone, who favoured me with it, although that, considering the respectability of his character, the independency of his circumstances, and his total want of connection with the military, might be considered as sufficient; it is confirmed

firmed by medical gentlemen who were of the
 staff at the time in the island. For my own part,
 having had no knowledge of the military part of
 the garrison at St. Lucia, it cannot be supposed
 I have any thing personal in view. My object
 is, by holding up the picture to public observation
 and detestation, to prevent the commission of
 such enormities in future. My informant speaks
 only of what he saw ; and therefore confines
 himself chiefly to two of the British regiments
 left in garrison at St. Lucia in June, 1796.
 One of these was stationed at a post called
 Mabya, considered as the most unhealthy on the
 island, after suffering much by sickness on the
 Morne, from June till the beginning of August.
 The deadly exhalations from the swamps, threw
 down near 300 of the men in a very short time ;
 but the principal sickness took place in the months
 of October and November, when the endemic
 causes were most prevalent and most active. At
 this dreadful period, scarce a single medicine was
 with the regiment ; no hospital was erected, nor
 house for the purpose procured ; no palliasses or
 any other species of bedding provided ; far less
 were they furnished with such comforts, or with
 such attendance, as could contribute to their re-
 covery in any respect whatever. Strange to tell,
 such was the apathy of those whose duty it was
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to represent and obtain relief from such complicated distress; that no demands or requisitions for materials for building an hospital, for medicines, or for any other necessary, were made. The French inhabitants of the neighbourhood, more feeling than their own officers, saw and pitied the distresses of the soldiers, and offered their services in procuring proper food, attendants, nurses, &c. but with a most unaccountable indifference, these generous and benevolent offers were rejected. Some time after this deplorable exhibition of character, it was discovered that a large chest of medicines had been lying disregarded, and unfought for in the regimental store.

The other regiment, immediately after the reduction of Morne Fortunée, were encamped or hutted in a situation near that post, the least possible adapted to the preservation of health; and an immense quantity of rain falling at the same time, the men almost literally became rotten on the spot. More than a half perished before a thought was bestowed on their unparalleled misery. At length, about the middle of August, the wretched remains were sent to Gros Ilet, and Pidgeon Island. The sickness did not cease on this change of situation; and being seconded by an inhumanity, an apathy, a something which wants a name to convey an adequate idea of its
horrible

horrible nature, ended fatally almost without exception. My informant's business, or his curiosity, led him to visit Gros Ilet in the month of October. One of the hospitals, the church, he more particularly examined. In this were about 200 *sick and dead*, all flung in hammocks, no cradles or bedding having been procured; not a single nurse or attendant of any description had been furnished: what was the consequence? The miserable wretches literally wallowed in their own filth, without a possibility of disengaging their bodies from so shocking a state; fresh meat had been supplied, but as there were no attendants to dress it, it lay on or under their hammocks in every stage of putrefaction. From the same cause, when a patient had the good fortune to escape from this to a better world, his putrid remains remained in his hammock for several days unattended to. The French inhabitants of the village and neighbourhood generously came forward with proffers of assistance; but they were rejected, for what cause it is impossible to conceive. At length nurses were provided, and labourers employed, by whose means these courts of death were cleaned, and rendered tolerably comfortable. But the mischief had already been done; and the regiment, consequently, in a very short time became a mere skeleton. Should it
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be urged that the medical officers of the regiments thus suffering, were unequal to the care of so great a number of sick, or had themselves fallen victims to the climate and situation, which in some instances happened, let it be asked, was it not the duty of the principal officers of the General Hospital staff, to make every necessary enquiry, to provide for their accommodation, and to secure a proper medical attendance. A surgeon of one of the regiments in question, overpowered by fatigue and sickness, but unwilling to relinquish the station his duty and his feelings as a man called him to, assured me that the aid of the staff was repeatedly but ineffectually demanded. A complete general hospital establishment was fixed on Morne Fortunée, yet only about forty patients were admitted during the most sickly period. Where was the boasted humanity of the British character fled, when those who had the charge of the hospital stores, would not issue a single article for the relief or comfort of the sick with their regiments? When too late, an enquiry was instituted; and then the assistance which a few months before might have saved thousands, was ordered—Thus,

Victoresque cadunt Danaë: crudelis ubique

Luctus, ubique pavor, & plurima mortis imago. VIRG. Æ. 2.

CHAPTER III.

Saint Vincent.

A DESCRIPTION of this and the other higher islands, after what has been given of Grenada, Martinico, and St. Lucia, would be only a repetition of the same observations, their great leading features, with a little modification, being similar. Thus St. Vincent is less characterized by conical than by ridgy mountains; and these less by curvilinear than by straight and diverging directions towards the sea; although the whole, taken collectively, is fully as much divided as Grenada. The happy effects of this disposition of the ridges and corresponding vallies, are, the great abundance of fine rivers, the capability of the surface to be improved by cultivation, the absence of marshes, and the unrestrained current of air, the inhabitants every where enjoy. The soil too of this island contributes amply to the production of a healthy pure atmosphere: whilst a mixture of black vegetable mould and fine quartz sand, gives uncommon vigour to the vegetation of the sugar-cane, it prevents the possibility

bility of the stagnation of rain water, by an immediate absorption of it. The obvious consequence of so many natural advantages, is the absence of marsh miasmata, and the obviating the effects of moist exhalations in the woody and uncultivated tracts. It is a fact, founded on the universal experience of the inhabitants, and strengthened by that of Europeans settling on the island, that St. Vincent is not surpassed in health by any island in the West Indies. The aspect of the inhabitants furnishes a most satisfactory manifestation of this; the indication of a salubrious atmosphere is strongly marked on it; nor is the fallow complexion, the produce of marshy and unventilated countries, ever to be met with here. Confining our observation to the town of Kingstown—it appears that, notwithstanding the unfavourable peculiarities of its situation, it enjoys a considerable share of the general health of the island. This town lies on the leeward side, at the bottom of a beautiful bay of small extent; is built on a confined level of about a mile in length, and about 2 or 300 yards in breadth; and on all sides, except towards the sea, is enclosed by high mountains. The houses are generally small, and, except in a few instances, are crowded on each other, in parallel streets. A narrow stripe of land between the houses and the mountains,

mountains, which might formerly have been a source of disease, has been rendered for several years habitable and useful by drainage and cultivation. The amphitheatre around the town, viewed from the bay, is extremely beautiful, possessing a liveliness and a diversity highly pleasing. Every idea of sickness is estranged from the contemplation of this landscape ; and when we hear of an epidemic fever, we naturally look for an extraneous cause. Yet the yellow remittent fever occasionally appears, but with symptoms infinitely less formidable than it exhibits at Fort Royal or on Morne Fortunée ; the simple remittent is more common, but I believe very seldom fatal ; intermittents are never met with ; and hepatic affections and dysenteries are almost equally rare. What then has been the cause of the dreadful fever which epidemically prevailed at Kingston, and among the troops garrisoning the adjacent fortresses, in 1793. To enable the reader to form his opinion, I will lay before him the sentiments of respectable medical gentlemen, who at that time practised in Kingston, only premising what was believed and considered as the cause in 1793. In the month of April of that year, a privateer belonging, I understand, to Mr. Charles Warner, of Bequia, appeared off the mouth of the Carénage of Grenada, for the purpose of recruiting.

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At that time the malignant pestilential fever raged with the utmost violence on board the shipping, which for safety had collected there from all the out-ports. A number of sailors, some of whom had only just recovered from this fatal malady, and had then on the clothes they wore during their sickness, entered on board the privateer. Immediately after obtaining this addition to the crew, she returned to St. Vincent, and the Grenada sailors communicated the infection to others; and from them spread among the inhabitants.

On this subject, Mr. Melville, surgeon to the ordnance on St. Vincent, and an eminent practitioner, thus states his sentiments in his medical report to me, dated the 10th of December, 1797.

“ I did hear that, in the beginning of 1793, a little before the time the contagious fever appeared here, a vessel called the Hankey, from the coast of Africa, had called at this island on her way to Grenada, and landed one of her seamen, who died before I could see him, or any other medical gentleman. Immediately after that period the contagion spread, first almost entirely among those who had lately arrived from Europe; but in about three or four months after, some of the old inhabitants were seized with and suffered by it. In the Ordnance Hospital the attendants, and even two negro servants, were seized with it;

but, in the latter, the symptoms were much milder. From this circumstance alone I have no doubt of the fever being infectious. No particular disease appeared here during the prevalence of this fever: it was succeeded by the small-pox and measles."

The doubts which arose in the mind of another very ingenious and eminent practitioner, when endeavouring to investigate the cause of this fever, seem to strengthen the opinion of its origin entertained in 1793. Dr. Mackay, in a letter which he obligingly wrote to me on the subject, dated 6th June, 1798, thus expresses himself: "The disease, which has been called the yellow fever, made its appearance here about the middle of April, 1793, without any apparent cause. It could neither be traced to contagion imported, nor to any particular state of the atmosphere, nor to the operation of any local cause. It attacked chiefly persons from a colder climate; but there were exceptions, especially among the French emigrants. Its symptoms were various, but in no case corresponding with any description of the yellow fever to be met with in books. It generally came on with a slight chilliness, followed by headach, flushing of the face, inflammation of the eyes, moist tongue, hot and dry skin: little or no thirst, pulse from 109 to 120, sometimes

sometimes rather full, but more commonly small, contracted, and even somewhat hard. Sicknefs and retching from the attack : at other times this symptom appeared later, and, in a few instances, never in any considerable degree, although the fever was evidently of the same nature. Towards the end of the second day, the feel of the skin, and especially the pulse, often became perfectly natural, and there was little or no headach, no thirst, but the eyes were still red, and began to appear slightly yellow. The face was flushed, and the patient frequently brought up what he had drank, mixed with a ropery, and, at length, with a brownish mucus. A delirium, oftener coma, now came on—what was ejected was black ; and the pulse became very slow, and sometimes slower than natural ; the whole body of a peculiar dusky appearance, difficult to describe, but easily known by a person who has once seen it. The tongue is dry, and of a dusky red ; and the face exhibits a most peculiar expression of distress, and is sometimes partially convulsed. It is unnecessary to describe the catastrophe, which happened in different ways, and generally on the close of the fourth day. The most remarkable symptom attending this fever, and which, though it has been less taken notice of than many others, I think characteristic of it, is, that, notwithstand-

ing the incessant straining and retching, hardly a particle of bile is ever brought up ; unless, perhaps, on the first spontaneous evacuation of the stomach." In another letter, the same gentleman says, " with respect to the origin of the yellow fever, I must acknowledge I have at present no decided opinion." I may here observe, what I have had occasion to remark elsewhere, that no suspicion of contagion, or imported infection, existing at the time, it is not surprising to meet with ingenious and skilful men thus sceptic, or thus hesitating, respecting the belief of this fever originating in the latter, and being propagated by the former. They were not excited at the time to trace infection ; the evidences were soon forgot, or imperfectly known ; and the mental apathy too peculiar to the tropical climate in investigations of this nature, readily gave admision to the opinion, that no infection took place, because some trouble would be necessary in ascertaining it. This observation naturally arises from the consideration of the opinion given by Dr. Mackay's partner, Dr. Calvely, the scope of which is to establish an infectious origin. This gentleman, in a letter dated June 16th, 1798, thus writes : " The information I have to give, I fear, will not prove so satisfactory as you could imagine, as I was in England during part of the
time

time the malignant fever proved so fatal to the inhabitants of these islands. I arrived at Barbadoes the latter end of August, 1793, where the fever then prevailed, and, I believe, proved as fatal to the inhabitants as it had done to any of the others. I therefore cannot speak with propriety on the importation of the disease in question. No medical character ever supposed, that fevers were in the least infectious, in this climate, previous to 1793, at least I never heard of any; but since that period I am led to conclude, that a fever has prevailed which was highly contagious; and I draw my conclusions from facts. I have seen whole families carried off one after another, particularly those who had acted as nurses to the sick. If any endemic, or general cause, had brought on the disease, the whole would have been ill at the same time, which was never the case, but *vicê versa*." Dr. Calvely's description of the fever corresponds with that given by Dr. Mackay.

The history of the progress of this fever at Kingston, given by Dr. Davidson, who then practised in that town, in a letter dated the 18th April, 1798, does not, I imagine, militate against the opinion of imported infection. "It was about the beginning of April when I was informed by a gentleman of respectability and information,

tion, that a patient of his had several very uncommon symptoms. This was a clerk of Messrs. French and Slaters, and, I believe, the first victim to the yellow fever. A female, servant to a lady who had been shipwrecked on the coast of America, and got a severe wound upon her leg, upon its healing, was attacked soon after with the usual symptoms of the yellow fever, and died upon the fourth day. Her mistress a few days afterwards was also attacked, and neglecting early medical advice, also died. The disease spread, and several others, particularly those who had undergone great bodily fatigue, also were seized with this fever. It was towards the end of May that it appeared in my own family. My sister, who had laid in but a week before, was attacked, in a most violent manner, at midnight, with a cold shivering fit, which lasted beyond the usual time, and which she and those about her were inclined to think was a common intermittent fever, from her imprudent exposure to cold; but the violence of the symptoms, and their duration, soon left us without a doubt; she died on the fourth day. It was but the day after her death that her husband was attacked with the same fever, which proved equally fatal. The disease spread through the town; at first confined to those Europeans who had lately arrived, the
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young and florid, or those who had been much exposed to bodily fatigue; but it afterwards attacked the old settlers. The shipping suffered equally with the inhabitants ashore." The French emigrants, he afterwards adds, who had arrived in June, suffered still more, although all of them were seasoned to the climate. By these people the small-pox was introduced into the town; and it immediately assumed the most malignant symptoms. The Doctor is strongly inclined to attribute this fever to endemic causes, or the miasm of marshes; and partly founds his opinion on the fact related from him, by Dr. Rush, in his second publication on the Yellow Fever of Philadelphia, p. 65. But although I have a very high opinion of Dr. Davidson's judgment, I cannot, in this instance, reconcile his narrative and his deduction.

With respect to the cure—the result of the experience of these gentlemen is decidedly in favour of mercury alone, or combined with the cold bath in obstinate and untoward cases. Mr. Melville says, “where I succeeded in affecting the salivary glands, the mercury did hasten the favourable termination of the fever.” Dr. Mackay, “The last cases that occurred here I treated with mercury, and the cold bath, and I am persuaded this mode is most to be relied on.” Dr. Calvely,

“ This disease appeared to me the most insidious I ever met with ; but, when success followed my practice, it proceeded entirely from large and repeated doses of calomel. Under the use of mercury I have frequently prescribed cold water to be thrown on the patient, his body to be well rubbed, and afterwards wrapped up in a blanket, which has been attended with the best effects.”

Dr. Davidson—he depended, at first, on the use of the cold bath, which, he says, he had been in the habit of employing in the cure of remittent fever, in Tobago, more than 26 years ago. In the fever of 1793, he was confirmed in the utility of it by the following singular accident. “ A patient to whom I was called on the fourth day, a sailor, after the black vomit had appeared, found himself much relieved, and, indeed, found no other relief to the gastrodynia, but when he was immersed in water. He died ; but the sailor who attended him, and was attacked with the same fever, was so impressed with the relief his companion had felt, that he went into the sea, with all his clothes on, returned completely wet, but free from fever. After drying himself, going to bed, and sweating profusely, he fell asleep, and awaked perfectly refreshed ; and with the use of cold bathing, without any other remedy, except a gentle purge, he completely recovered within a few

few days." The 48th regiment, then forming the garrison at Berkshire-hill, were attacked later than the inhabitants, being less exposed to infection. This garrison the Doctor then attended, and in the case of a woman attached to it, accidentally discovered the advantages of saturating the system with mercury in the prevailing pestilence. To purge, he gave her pills composed of cathartic extract and calomel. "On the following morning," says he, "to my surprise, I found her mouth violently affected with the mercurial action, and that the fever had left her." After this fortunate accident, he constantly employed calomel; and in his medical report of the treatment of fever in the Ordnance Hospital at Fort Royal, Martinico, he observes, "long experience has convinced me, that it is upon a new action being produced, that the salvation of the patient depends; and although some instances have occurred, of a copious, mild, and protracted diaphoresis having removed every complaint; and, at other times, of the disease being resolved by a copious flow of urine; yet I am chiefly determined in the forming of a favourable crisis, by the mercurial action on the gums and salivary glands."

The pestilential fever has occasionally appeared at St. Vincent since 1793: and after the caraïb
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and brigand war broke out in 1795, several causes co-operated in rendering it extremely fatal to the troops. A detail of them would only give rise to melancholy emotions ; or, perhaps, rouse our indignation against the authors of a misery which we can only pity. Let it suffice to observe, that when the general good is lost sight of in the pursuit of individual interest ; when our country is abused by the rapacious views of those employed to conduct her armies ; we can expect nothing but disaffection, relaxation of discipline, defeat and disease to take place in them. The British regiments employed at St. Vincent during the whole of 1795, furnished melancholy proofs of the justness of this observation, for the greatest part of them were reduced to skeletons. The evil unhappily was not confined to themselves ; the remains of some of them introduced the infection a second or third time into St. Christopher's, and the first time into Tortola, in their way to England in 1796.

CHAPTER IV.

Barbadoes.

BARBADOES exhibits a specimen of coralline accretion, elevated by volcanic influence—one of the only two instances, I believe, of that curious formation to be met with in the Caribbean Islands. The various degrees of resistance opposed to the expansive power of this almost irresistible agent, have been the causes of the unequal surface; the wavy disposition of the coralline ridges; the numerous caves; the argillaceous and pyritous structure of one district, Scotland; the mephitic spiracles; the bituminous exudations; this island is so distinguished for. Without dwelling on the causes of the singularity observed in the construction of this beautiful island; without solicitude to controvert the theory of those who refer all its phenomena to the operation of a general deluge; I shall content myself with observing, that one agent alone was not sufficient to produce so extraordinary an effect; and that the two most powerful agents in nature,

nature, fire and water, probably succeeded each other, or united, in its production; the first in elevating, and where resistance was disproportioned to the pressure from below, disrupting, or leaving, immense souterrains; or throwing the expansible body it acted on, into parallel ridges, successively increasing in height; what had derived its origin from the former. The successive, or united, operation of these agents, is the basis of the theory of the best informed and most experienced mineralogists and orologists. Thus Signior Moro accounts for the phenomena of stratified mountains, and the marine productions therein found. Such is also the theory of M. Ferber; and such, too, is that of M. Raspe. In fact, the whole may rest on the following explanation—"A variety of parallel and horizontal strata are produced, by various causes, at the bottom of the sea; earthquakes have broken, disordered, and raised large parts of them above its level; volcanoes work both under and above the sea; and many fossils are daily produced and accumulated by them into hills, high-towering over the former plains, till rain and water level them again to the ground." The operations of nature have been more attentively examined—mineralogy embraces a wider scope—and we cannot

not henceforth ascribe the origin of the many rock and stone-beds to a single cause; whether our favourite system be an immediate creation, or a general flood, or a general and successive conflagration.*

The general appearance of Barbadoes is extremely beautiful, particularly the northern and eastern sides, where a happy combination of wood, and the broken and elevated surface of the chalk rocks, and Hillaby hill, with cultivation, gives a romantic cast of feature to the landscape. The leeward side is less elevated, of a smoother surface, very little wooded, and resembles the flat, but thickly seated tracts of England. It exhibits, in short, that tame appearance, which a connoisseur in picturesque scenery, Mr. Gilpin for instance, may think, however beautiful, however adorned, cannot distend the mind as a country rough with all its irregularities about it—as a scene where beauty and deformity, grandeur and horror, mingled together, strikes it with a thousand opposite ideas, and, like chemical infusions of an opposite nature, produce an effervescence, which no harmonious mixtures can excite.† But the traveller in the West Indies, sated with such

* Raspe's Preface to M. Forber's Letters, &c. p. 14, 15.

† Northern Tour, vol. i. p. 121.

combinations,

combinations, dwells with peculiar delight on the beauty and fertility, the immense population and proportional abundance of Barbadoes—where

*Gratia, fama, valetudo contingat abunde,
Et mundus victus, non deficiente crumena.*

About the middle of the last century, about thirty years after the settlement of an English colony, the progress of the colonists in the establishment of the capital, and in the cultivation of the land, was truly astonishing. Both have evidently diminished greatly since; but whether from a failure of fertility in the soil, or of industry in the inhabitants; or whether the former having taken place, has created a spirit of enterprise and emigration formerly unknown among the natives of Barbadoes, I shall not take it upon me to determine. Du Tertre, jealous of the prosperity of the English, and consequently, we should imagine, little inclined to give his countrymen any favourable representation of their situation, thus describes what the Plenipotentiary, M. du Blanc, of M. M. Clodoré and Chambré, the French Commissioners at St. Christopher's, to Lord Willoughby, of Param, the English Governor General at Barbadoes, in the beginning of the year 1666, relates of the state of Bridgetown, and

and of the cultivation of the island at that time.

“ La principale ville qui est nommée le Pont, contient environ quinze cent maisons, toutes fort bien bâties de briques et de pierre de taille, enjolivées de vitres, de galeries, et d’autres agrémens à la mode Angloise. La plûpart de ses Bourgeois sont marchands, tenants boutiques ouvertes, et aussi richement garnies que dans Londres.” The exportation sugar amounted to a sufficiency to load 200 ships annually. The inhabitants of the country were infinitely better lodged than those of the town; and M. du Blanc was so astonished at their magnificence, as to represent their houses as more like palaces calculated for the residence of princes. These people had equipages suitable to their magnificent establishments, for they possessed “ plus de cinquante carosses, qui vont par-tout sans incommodité;” a certain proof of excellent roads: a lapse, however, of 133 years has rendered them proverbially bad. The city of the bridge could, in 1666, send forth, completely caparisoned, 4000 horsemen—a comparison of the present dress of the inhabitants, with what it was a century and a half ago, will give a result little favourable to the cleanliness, the industry, or the prosperity of the present race. M. du Blanc found “ tout le monde de la campagne

pagne auffi propre et auffi leste que dans Londres." What does the traveller of the present day meet with in Black Rock, Scotland, the environs of Bridgetown, &c. &c. &c.?

Bridgetown stands on a gently declining plain, the basis of which is coralline rock; its situation is highly beautiful, but being to leeward, and little elevated, it is subject to great heat. This applies more especially to the streets parallel to the sea; those higher, and built in diverging lines from the sea, having all the benefit of the trade-wind, which blowing over the island, furnishes them with an uninterrupted perfusion of cool fresh air. The eastern side, where Constitution-hill is situated, and where the king's house and an extensive barrack stand, is thought to be affected by marshy miasm from a branch of the sea which runs a considerable way into the country. But besides the exemption from the effects of miasm, experienced by the inhabitants, it is probable deleterious exhalations are prevented by the flowing of the tide, which washes the suspected ground twelve hours in the twenty-four. With one or two very confined exceptions, the same may be said of the extensive peninsula on which St. Anne's Castle, Needham's and Charles's Forts stand. Indeed, casting the eye over the whole

whole island, nothing like swamp, or grounds exhaling dangerous vapours, are to be seen; the thin covering of light but fertile soil, and the subincumbent rock of a coralline and porous nature, rendering the stagnation of water, and the formation of marshes impossible. Except the parish of St. Andrew, otherwise called Scotland, the whole of the subincumbent rock of Barbadoes, is coralline, exhibiting, in many places, a very singular arrangement of ridges, parallel to the coast, and having the sides towards the sea, uniformly perpendicular. The excavations made to facilitate the direction of the roads, show the depth of the coralline strata: in one of these I measured the depth, and found it fully forty feet, but as the road was of the same substance, the real depth must have been infinitely greater. The caves so frequently met with, and so extensive, furnish a still stronger evidence of this. Cole's Cave, fully two hundred feet below the adjacent country, is entirely composed of coralline, with innumerable and very curious stalactite encrustations, conical, orbicular, or formed into massy fluted columns. The parish or district of Scotland is very differently constructed; the rock is either of the sandy kind cemented by argillaceous earth, and of a red colour, or more solid, deep brown,

brown, and very ponderous; or blackish, and much more solid and ponderous, and thrown into strata. The last is, by the inhabitants, called "black nap." The soil is either a yellow or a reddish earth, mixed in several places with a large proportion of clay; in others with sand. In many places where the road is cut through hills thus constituted, there are exudations of petroleum, or Barbadoes tar; and the smell of this bitumen is predominant over all the district. Scotland, besides the exclusive possession of the pits, from which the tar, so well known, and so celebrated, is collected, is also distinguished for chalybeate and sulphureous springs, and spiracles of inflammable air. The change from coralline rock, of which all the rest of the island is formed, to that just described is instantaneous; and its volcanic origin is rendered still more probable, from the curious insulated blocks of coralline met with in the latter. Some of these are sixty feet high, and more than 300 in circumference, very singularly perforated, and beautifully diversified by an immense assemblage of plants and small trees, which strike root in their fissures, and after penetrating through the whole mass, draw nourishment from the subjacent soil. Whether the generation of petroleum may, with most mineralogists,

logists, be assigned to the action of subterraneous fire, or with others, to a natural chemical process, the inhabitants derive considerable advantages from it. Thus they find it an excellent remedy; 1st, in the glandular disease, or *Barbadoes fever and ague*; 2d, in spasmodic asthma; 3d, in leprosy; 4th, in tetanus and all clonic spasmodic complaints; 5th, in strains and contusions; 6th, in horses for the farcy, dry-belly-ache, and frequently as a preventive of disease; 7th, in a species of murrain or plague which raged in this district during the years 1794 and 5; and lastly, it is used by the lower class of the inhabitants of the parish or district of Scotland in lieu of oil for their lamps, which purpose they have assured me it answers very well.

The interior country is somewhat rugged, divided into gullies, small precipitous ridges, abrupt cliffs, or easy declivities. The rock is universally coralline; no run of water, however, is to be met with, and only one spring of any importance, the water of which has been collected into a neatly built reservoir, chiefly used as a bath, people resorting to it for that purpose from all parts of the island. Reagents have detected nothing but a little calcareous earth in it: but its temperature is surprizingly cool. Much of this

part of Barbadoes is finely wooded, but barren and totally uninhabited. In an island, whereof the population is so wonderfully great, waste land becomes an object of curiosity. Barbadoes contains about 80,000 square acres, of which 60,000 may be capable of cultivation. On this superficies about 120,000 people of every description live.* How this is contrived is a problem of difficult solution; and the difficulty will be increased when two facts are considered. During the American war, when no supplies whatever could be drawn from North America, and scarce any from Great Britain, no want of the necessities of life was felt by the lower classes of white and all the negro inhabitants; and the luxury of the tables of the opulent was scarce diminished. There is an annual exportation of live stock, eggs, &c. to the amount of 20,000*l.* currency.

The peculiarities remarked in the construction of Barbadoes, such particularly as the porosity of its rock, and the thinness and lightness of its soil; the innumerable cavities the body of the island is divided into, its trifling elevation, and its al-

* When the cultivation was extended to less than one-half the island, in 1647, the population was considerably greater; for Mr. Ligon expressly says, p. 43, the whites amounted to 50,000; and p. 46, the negroes were double that number.

most universal privation of forest, give a peculiar character to its atmosphere. Thus it is remarkably dry, and no clouds, as in the other islands, are ever perceived enveloping its surface; thus too, the thermometer indicates an uniform temperature, and the barometer a steady elasticity of air; and thus the hygrometer experiences little variation, and the pluviometer is almost an unnecessary instrument. The year 1798, however, constituted here, as every where else in the West Indies, an exception; for the quantity of rain which fell was comparatively considerable. During that year the range of the thermometer near St. Anne's Castle, taken at 1 P. M. was no more than 10° , giving an average of about 85° . The same causes prevent the flowing of any thing like a stream of fresh water; and may be considered as chiefly operative in communicating a copious calcareous and saline impregnation to the water drawn from wells. In an atmosphere thus constituted, it may be readily admitted, that little disease can prevail. Experience justifies this conclusion; and Barbadoes is truly the healthiest spot in the western, and perhaps in the whole world. The debilitated fly to it for health, and seldom leave it without the complete enjoyment of that blessing. When this island was loaded

with forests, and when, consequently, the atmosphere was moist and frequently charged with noxious exhalations, diseases consequent upon such were frequent, and marked with their usual symptoms in such circumstances. Ligon, who landed on Barbadoes from England, about the 31st of August, 1647, thus speaks of the general appearance it exhibited: "There we saw the large, high and lofty trees with their spreading branches and flourishing tops, seemed to be beholding to the earth and roots that gave them such plenty of sap for nourishment, as to grow to that perfection of beauty and largeness, whilst they in gratitude, return their cool shade to secure and shelter them from the sun's heat, which, without it, would scorch and dry away, &c." Yet, with all this beauty of scenery, this general covering of high and lofty trees, a dreadful pestilence, either proceeding from local causes or imported infection, for Ligon is undetermined which to attribute it to, prevailed to such a degree, at the time of his arrival "that the living were hardly able to bury the dead." He adds "In this sad time, we arrived in this island; and it was a doubt whether this disease or famine threatened most; there being a general scarcity of victuals throughout the whole island." At that
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time the morafs to the eastward of the town or “the bridge,” as it was then denominated, was excessively offensive ; and Ligon justly exclaims against the extreme imprudence of the inhabitants in throwing the bodies of those who died of the pestilence into the bog, for no other reason than because the trouble of digging graves was thereby saved.* Since that time the climate of Barbadoes must have undergone an astonishing change, and its surface must have been

* “But the main oversight, says Ligon, was to build their town upon so unwholesome a place. For the ground being somewhat lower within the land, than the sea-banks are, the spring-tides flow over, and there remains, making a great part of that flat a kind of bog, or morafs, which vents out so loathsome a favour, as cannot but breed ill blood, and is, no doubt, the occasion of much sickness to those that live there. At the time of our arrival, and a month or two after, the sickness reigned so extremely as the living could hardly bury the dead ; and for that this place was near to them, they threw the dead carcases into the bog, which infected so the water, as divers that drank of it were absolutely poisoned, and died in a few hours after ; but others, taking warning by their harms, forbear to taste any more of it.” He afterwards, stating the advantages and disadvantages of a planter’s life in Barbadoes, twenty-two years after the establishment of the first colony, takes occasion again to enlarge on the unhealthiness of the country. “Sicknesses are there more grievous, and mortality greater by far than in England, and these diseases many times contagious.” These evils were heightened by “a plentiful want of remedies.” See “A True and Exact History of the Island of Barbadoes. By Richard Ligon, Gent. Lond. 1673, p. 19, 20, 21, 25, 117.

disembarrassed of innumerable sources of disease; or observations more consonant with truth than those made by its medical writers and earliest historians, must have been made. The usual diseases endemic in the West Indies are met with; but the danger attending them is beyond all comparison less. The fevers are generally of the remittent kind; intermittents never, I believe, are seen, except in such instances, where the habit of the disease contracted in a marshy country, has not been overcome for some time after a change of residence. Dysenteries and diarrhæas also appear, and bear a still greater proportion in the scale of morbid action than fevers. But it is unnecessary to search in the atmosphere for their causes, the water almost universally made use of, furnishing an abundance of stimuli to the intestinal canal. In the general classification of the diseases of Barbadoes, fevers may be considered as holding a proportion of 1 to 6; and dysenteries and diarrhœas as 1 to 4. A fact will illustrate the healthy constitution of Barbadoes, By the hospital returns made to me by Mr. Straghan, surgeon to the Ordnance on the island, it appears that during forty months, viz. from September, 1795, to the 31st December, 1798, 552 patients of the royal artillery were admitted
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into the Ordnance Hospital, of which number only 23 died, and of them by far the greatest part were desperate cases brought from Martinitico. Of the above number, 204 were admitted during the year 1798. Of these there were 30 cases of simple remittent fever, 20 of dysentery, and 29 of diarrhoea; the remaining 125 were accidents of no importance; not a single man died.

The singularly arid constitution of the Barbadian atmosphere has given rise to a disease equally singular. An affection of the lymphatics, attended with a symptomatic fever marked with paroxysms and intermissions ushered in by horror and rigour, and succeeded by extravasation and deposition of lymph in most instances, is almost peculiar to Barbadoes, and is distinguished by the native inhabitants by the name "fever and ague," and "the Barbadoes disease." As the early writers have not described this disease, it is to be presumed that, then, the atmosphere being, from a mere wooded surface, differently constituted, it had not existence. Its frequent appearance at Antigua of late years, seems to furnish a proof of its being the effect of a cause, common to both islands, an arid atmosphere. In very rainy seasons the latter, however, does not experience the exemption from violent tropic diseases, which

which happily distinguishes the former; and this may be attributed to the want of absorption in the argillaceous rock and soil of Antigua, and the percolatory nature of those of Barbadoes.

How far contagious fevers, or such as have proceeded from an imported infection have prevailed in Barbadoes, has by no means been well ascertained. We are left in some degree of uncertainty relative to the cause of the pestilential fever which so fatally prevailed at Barbadoes, and most of the French islands in the years 1647 and 1648, by Mr. Ligon; but if we call in the contemporary testimony of Du Tertre, our doubts will give place to an almost complete manifestation of the existence of imported infection at that early period. The testimony of Ligon is contained in the following passage of his very curious and scarce book, "The True and Exact History of the Island of Barbadoes" "We found in Carlisle Bay (31st August, 1647), riding at anchor, twenty-two good ships, with boats plying to and fro, with sails and oars, which carried commodities from place to place; so quick stirring and numerous, as I have seen it below the bridge at London. Yet, notwithstanding all this appearance of trade, the inhabitants of the *islands*, and shipping too, were so grievously visited with the

the *plague* (or *as killing a disease*), that before a month was expired, after our arrival, the living were hardly able to bury the dead. Whether it were brought thither in shipping, (for in long voyages, diseases grow at sea, and take away many passengers, and those diseases prove contagious), or by the distempers of the people of the island; who, by the ill diet they keep, and drinking strong waters, bring diseases on themselves, *was not certainly known*. But I have this reason to believe the latter; because for one woman that died, there were ten men; and the men were the greater debaystes." The extraordinary and inhuman practice he relates, of the throwing "the dead carcases into the bog," might, no doubt, give additional activity to the virus of the imported infection, in that part of the town, at least, built near the bridge.* The authority of Du Tertre is more decisive, but as I have already, in the chapter on Martinico, detailed what he says on the subject, I shall not enlarge on it here, but leave what is there stated to be compared with the foregoing passage from Ligon.

Dr. Henry Warren, in his "Treatise of the Malignant Fever in Barbadoes," addressed to Dr.

* P. 21, 25.

Mead, in the year 1739, has not hesitated to give his decided opinion on this subject. He sets out by informing us that “ it has been often very justly observed, that we have no malignant distempers truly indigenous, or natives of this island; and that such have always been brought in among us from some other *infected places* ;” and adds, that “ it is *certain*, that this, and the other sugar islands, have several times been visited by these unwelcome guests, at uncertain intervals, and no stated periods of time.” In support of this assertion, he afterwards proceeds to arraign the judgment of preceding writers, particularly Dr. Towne, in having confounded or “ blended together two most different maladies, the malignant, and, the ardent fever of Barbadoes, in one and the same description, without any discrimination of the symptoms that are proper and congenial to each, and plainly distinguish one from the other, comprehending or rather confounding both under the general title of *febris ardens biliosa* ; and I am persuaded, that where he succeeded in his boasted method of cure, the fever has frequently been of the ordinary inflammatory class.” He then endeavours to illustrate these general observations, by a description and particular history of the fever which constitutes the subject of his

his Treatise. In this attempt, however, he has been extremely unfortunate; and by assuming as truth, such conjectures as the indefinite accounts of French writers suggested, he has involved himself in a labyrinth of unfounded assertions and inconsistencies. He lays down as a general and incontrovertible position, that the fever he treats of "is truly of the pestilential kind, and ought, properly, to be called by no other denomination."

"It resembles, he says, *very nearly (except that the condition of the blood is not the same)*, the pestilential fever described by Dr. Sydenham, which continued for some time after the plague of London; and it is attended with many appearances peculiar to the plague itself; the plague boil, and the rapidity and ferocity of the symptoms only excepted; so that it seems to differ from it only in degree, but not in species. The French call it sometimes *la maladie de Siam*, from a country of that name in the East Indies, *where it is a constant inhabitant*. It has made two visits to this island, within the space of these last sixteen years: the first was somewhat above fifteen years ago; and it was, at that time, generally thought to be introduced among us from Martinique, in the Lynn man-of-war, and committed much ravage here for two years or more. The second appearance

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ance it made was in the year 1733, towards the latter end, or about the Christmas holidays; since which time we have never been totally free from it, though it has sometimes seemed to lie dormant for a month or two together. This last invasion was likewise from Martinique, from whence it was brought to us by an English surgeon, who died of it here a few days after his arrival. Some small time before Mr. Nelson (for that is the name of the English surgeon above mentioned), left Martinique, this fever broke out there with very great malignity, and soon swept away a multitude of people, especially newcomers, and sea-faring persons, such as had purer blood, and probably less adust than the natives; or of those whose constitutions had been for many years fitted and habituated to the climate.”

“ The occasion of this calamity was thus: a provençal fleet came in, about that time, to Port St. Pierre, from Marseilles, on board of which were several bales of Levant goods, which were taken in by some vessels of the fleet in the road of Marseilles, for the American market, out of a French ship that had just arrived from St. Jean D’Acre (probably the Ptolemais of the Ancients), where the French drive a considerable trade, though the place is seldom free from pestilential infections.

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Upon opening these bales at Port St. Pierre, this distemper immediately shewed itself, many of the people employed were instantly seized, some died almost suddenly, others in a few days, and some lingered longer; and the contagion still spreading, made great havock at the beginning. *This account I had from the mouth of the said Nelson a few days before he died.* He adds, that “within five or six months afterwards, the same detail was confirmed to me by a gentleman of understanding and veracity, who at that time resided at Martinique; with these further circumstances, that the distemper for some time had abated there so considerably that it was thought entirely to have left the island, when suddenly another Marseilles vessel arriving, brought it back a second time, with more rage and violence than before.”

Dr. Warren concludes his account of the origin of the malignant fever by some reasoning founded on the freshness and purity of the air of Barbadoes, on the high cultivation of the land, on the absence of lakes or marshes, on the surface being divested of woods, on the free perspiration which universally takes place from the trifling height of the island, and on the general observation that changes of weather had no effect in giving a character to any disease, or producing “an epidemical

cal malignity," It must be confessed that, however improbable the general circumstances of Dr. Warren's history of his malignant fever may be considered, the deductions from the reasoning with which he closes it, are obstacles to a total disbelief, which cannot be surmounted without extreme difficulty, and without assigning something like an apocryphal aspect to the premises. The observations of Mr. Hughes and Dr. Hillary only increase the difficulty; and, perhaps, after a fair and impartial survey of their sentiments, contrasted with those of Dr. Warren, the reader may be inclined to conclude with me, that the "truth lies between." In opposition to Dr. Warren may also be placed Dr. Towne, who wrote thirteen years before him, and whose opinion is so warmly impugned by him. Warren, however, feels no hesitation in asserting, that he had the pleasure of convincing Towne of his mistakes, and that he must do him the justice to declare, that he frankly retracted his opinion before he died; a testimony of Dr. Towne's recantation to which the reader may attach the degree of credit he thinks it may merit. Mr. Hughes and Dr. Hillary treat the opinion of Dr. Warren with little ceremony. The former says, "Dr. Warren, in his ingenious treatise upon this distemper,

temper, concludes it to be a species of the plague, and that the infection was unhappily brought to Martinique in bales of goods *from Marseilles, in 1721*; though others, who have resided much longer on the island, are of a different opinion, especially Dr. Gemble, who remembers that it was very fatal here in 1691, and that it was then called *the new distemper*, and afterwards Kendal's fever, the pestilential fever, and the bilious fever." He adds, that it prevailed also in 1696 and 1715. We perceive, however, an incorrectness in his statement of the period at which the infection was introduced, as related by Dr. Warren; but we are struck with the appellations "new" and "pestilential," as applied to the epidemic of 1691; and we see a singular coincidence in the appearance of this fever at Barbadoes, and in the prevalence of that described by Pere Labat, at St. Pierre, Martinique. Dr. Hillary expresses his astonishment at the opinion of Dr. Warren in these words: "I cannot conceive what were the motives which induced a late ingenious author (Warren), to think that this fever was first brought from Palestine to Marseilles, and from thence to Martinique, and so to Barbadoes, about thirty-seven years since. A better enquiry would have informed him that this fever had frequently ap-

peared in this and the other West India islands many years before ; for several judicious practitioners who were then, and now (about 1760) are living here, whose business was visiting the sick the greatest part of their life-time, some of them almost eighty years of age, who remember to have seen the fever frequently in this island, not only many years before that time, but many years before that learned gentleman came to it." Notwithstanding this positive denial of any participation of pestilential infection in the fever described by Warren, he, in the very next page observes, " that it has sometimes been observed in combination with some other malignant fever *which is then epidemical and contagious*, as happened once at Antigua, and once or twice in this Island." And he afterwards betrays an unpardonable inconsistency, when he doubts " whether this fever proceeds from *infectious miasmata*, or it arises from the great heat of the air and water, and the putrefaction of our fluids." The incorrectness too of his information respecting the origin of the name *maladie de Siam*, deprives him considerably of the right of decision on this point: he says " the French call it *la maladie de Siam*, from its being frequent in the kingdom of Siam in the East Indies, which is
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situated between the tropics, near the same latitude with the West Indies."

Dr. Warren's medical treatment of the fever he describes, in conformity with his idea of its cause and pathology, was strictly tonic, and was attended, notwithstanding his assertion of the contrary, with little success. I find, however, an observation on the use of calomel in inflammatory fevers, which merits some notice, and which I was not formerly aware of. He says that "a very odd and unwarrantable practice has obtained *for many years* among several of the plantation practitioners in this island, of giving calomel in inflammatory fevers, when the blood appears to be much loaded with size, in order, as is pretended, to remove its siziness, by rendering its particles thinner or less viscid and cohesive." The Doctor, highly displeased at a practice which militated so directly against the received theory of "the inward operation of mercury," and of "the true nature of size," gives these practitioners no quarter; and exultingly exclaims "but when the velocity of the blood is exceedingly increased, as in ardent fevers, what ruin and devastation must this active medicine commit in the soft substance of the brain, among vessels of inconceivable exility and tenderness?" The reasoning,

soning, however, with which he endeavours to combat the exhibition of mercury in fever, is too absurd, and too unscientific to demand a moment's attention.*

From the time of Dr. Warren, till the year 1793, it does not appear that any suspicion has been entertained of infection imported into Barbadoes. That this happened about the end of May or beginning of June of that year, I have undoubted authority for advancing as a fact. The origin of this dreadful calamity was an event little known or little attended to at the time; and chiefly from the ignorance the inhabitants of Barbadoes, in general, laboured under of the ravages which had already been committed by it at Grenada. It was well known at Grenada however; and the introduction of infection at

* See "Treatise concerning the Malignant Fever in Barbadoes and the neighbouring Islands; with an Account of the Seasons there, from the Year 1734 to 1738, in a Letter to Dr. Mead, by Henry Warren M. D." Ed. Lond. 1740. p. 1 to 36. The scarcity of this Work has induced me to dwell longer on the facts and reasoning it contains. Griffith Hughes's Natural History of Barbadoes, fol. Ed. p. 37, 39. Hillary on the Air and Diseases in Barbadoes, p. 143 to 153. A Treatise of the Diseases most frequent in the West Indies, and herein more particularly of those which occur in Barbadoes. By Richard Towne. The Introductory Account of the Climate, &c. of the Island is deserving attention; and p. 20 to 69.

the former island, was universally attributed to it. Towards the close of the month of May, the schooner Fan-fan, employed for that purpose, and therefore denominated the Demerary Packet, sailed from St. George's, Grenada, with her Captain, of the name of Maken, labouring under the inflammatory stage of the malignant pestilential fever; and two of her crew also in the same state. Some gentlemen who intended to take their passage in this vessel to Demerary, particularly Dr. William Munro, my former partner, were prevented by the dangerous situation of the Captain and crew, and the certainty of receiving the infection should they hazard the voyage. On the arrival of the Fan-fan at Barbadoes, where she was bound by contract to touch, the Captain was landed in the last stage of the fever, and was lodged in a house near the bridge; the vessel after this proceeded on her voyage, and almost immediately after Captain Maken died. The infection spread to the inhabitants of the neighbourhood of the Pier or Mole; but was most conspicuous in the Ordnance Hospital, situated in the midst of the ruins of an old fort or battery close adjoining the Mole, a distinction chiefly assignable to the vicinity of rum retail shops, and the consequent facility the ar-

tillery enjoyed of procuring that destructive liquor ; and to the obvious retention of infection, and application of it to their persons. Mr. Straghan, surgeon to the Ordnance at Barbadoes, thus stated the fact in his medical report to me, dated December 11th, 1797. “ The soldiers of the royal artillery were certainly attacked first with this fever in 1793. They had only arrived a few days, I believe, from Gibraltar, and it being unusual for the artillery to die so fast, the inhabitants were alarmed, and petitioned the President to prevent any more sick being brought to the fort, which we used as an Ordnance hospital : we afterwards put the sick into such houses as we could get for them at St. Anne’s Castle. The inhabitants were soon after attacked with this fever in the country as well as in town.” With respect to the state of the health of the artillery previous to the infection, he observes that “ they came from Gibraltar along with the 32d regiment, and they were remarkably healthy.” The contagion was manifested by innumerable instances. Orderly men, nurses, and patients labouring under other complaints, were infected, and a great mortality was the consequence. One instance related by Mr. Straghan was singular : “ It was usual to send a man every morning at
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fix o'clock as orderly to the hospital, and it several times happened, in the course of the day, this very man was seized with the fever and died. We lost several men in this way." The scale of infection is thus stated: "Europeans by far suffered and were most subject to this fever, particularly from the age of eighteen to thirty. The inhabitants (natives) next: few or none of the coloured people were attacked with this fever. I do not recollect any other disease appearing during the prevalence of the fever." He adds, that it prevailed among the inhabitants to a most fatal degree; and such was the alarm and influence of fear on the mind excited, that the tolling of bells was stopped; and almost the interchange of the offices of humanity experienced a cessation. This statement does not rest on the authority of Mr. Straghan alone, although that, from his general character, and known veracity, might be considered as sufficient: it has been amply confirmed by some of the most respectable medical gentlemen of the island. Among these it is with peculiar pleasure I mention the name of Dr. Ellcock, to whom I am much indebted for many useful communications on the subject. This gentleman has taken pains to collate the history and symptoms of the fatal epidemic of 1793,

with those of the yellow remittent, and other fevers approaching to the continued form, which have prevailed at different periods during his residence on the island; and the result has been, that as the former had little affinity to these, in its origin, pestilential nature, symptoms, and treatment, so, no doubt remained on his mind that it was new, of foreign extract, and highly infectious. The mode of treatment found successful by Mr. Straghan exhibited a further evidence of the peculiar nature of the fever. "Calomel, he says, was admitted as a principal remedy; I generally combined James's powder with it, as I thought it acted better in that way, and sooner affected the salivary glands. It was a favourite prescription of mine, and frequently acted like a charm. When salivation had been excited, I thought the favourable termination of the fever hastened by it. I never bled but two persons in this fever, but it was only to look at the state of the blood, not more than an ounce and an half being drawn from either. It was done at the recommendation of Dr. Lindsay and Dr. Gilpin, and we were astonished at seeing the blood so loose, and the red particles so much broken down." The formidable symptom, irritability of stomach, he found best treated by the application

application of blisters to that region, and “ giving opium per anum,” after the intestines had been emptied by a purgative injection.

With respect to the causes of this fever, as it appeared at Barbadoes, a few medical gentlemen, adopting singularity in their opinion, and not admitting infection as the cause of the original introduction, or of contagion as that of its propagation afterwards; or perceiving no resource in marsh miasmata, from which the surface of the island is exempted; have attributed this, as well as all tropical fevers, to the *intensity of the solar rays and an atmosphere superabounding with caloric*. Among the supporters of this singular opinion, is a very ingenious friend, Dr. Robertson, surgeon to the Naval Hospital at Bridgetown. That the value of the opinion, or the soundness of the principles on which it is founded, may be estimated by the reader, I shall lay before him this gentleman's statement of it. “ I am inclined, says he, to look for the causes which occasion the diversity of forms of the fevers prevalent in tropical countries, in the country where such fevers or rather forms of fever prevail. And the circumstance in which the West Indies, and other tropical countries, differ most manifestly and universally from European countries, is unquestionably

ably *the heat of climate*, or, if I should speak more technically, *the intensity of the solar rays, and an atmosphere superabounding with caloric*, which may exist in a too abundant proportion for health, in air, even while it blows a breeze that may be sensibly cool; for as to the sensations of the body they are evidently relative, and not absolute." In another place I have entered more fully into the consideration of heat as the cause of tropical fevers. I shall only further observe here, that Dr. Robertson, of Barbadoes, and Dr. Clark, of Dominica, stand alone in advancing their theory; and that it is contradicted by the observation of most respectable practitioners. Dr. Warren, although, perhaps, too credulous with respect to the application of causes to effects, is nevertheless steady and correct in the present instance. "I have often observed, and I think with great certainty, that, even at the time that this malignity is actually harboured among us, a continuation of dry and sultry weather has been so far from giving any aggravation to it, that it has rather seemed to repress it, and make it lie more lulled and dormant, until the returning rains, and a moist atmosphere, had set it at liberty to exert its rage."*

Dr. Robertson, in his treatment of the fever of 1793 and 1794, at Barbadoes, furnishes a powerful and unequivocal illustration of the superior efficacy of mercury. "We are happily possessed of a remedy that in all cases will tend to fulfil these important indications, and we owe that remedy to experience: it is calomel. I do acknowledge it was some time before I got the better of my scruples against the free use of calomel in fevers; but I have never had cause to repent the trial, and it is now the chief and principal remedy I have recourse to." Bleeding he found highly injurious. On the use of this remedy he makes the following judicious remark, highly meriting the attention of those enthusiastic eulogists, who have considered large bleeding as the *sine quâ non* in the treatment of the malignant pestilential fever: "Of all the means of treating diseases, that of bleeding is the only one that has no corrective, in case it should appear to have been injudicious; and the patient may be lost before the mistake can be remedied in a disease of such violence and short duration. I have known many who have died that have been bled, and few indeed that have recovered when venæsection has been performed in this island." In relieving irritability of stomach, he
speaks

speaks favourably of the *essence of spruce*; but acknowledges that his experience has been insufficient to enable him to decide on its merit. Cayenne pepper is highly extolled in this intention, and as a tonic or stimulant during the debilitated state.

CHAPTER V.

Demerary.

A COUNTRY already highly important to Great Britain, but capable of becoming almost incalculably more so, when the settlers perceive themselves properly encouraged, and secured and protected in their possessions, merits our attention in a medical point of view. Until the chance of war threw this colony into the temporary possession of Great Britain, in the year 1781, little of this part of Guiana was known; and although the wealth it is capable of producing to the European nation protecting it, might have been whispered by the few who had experienced its value, yet it was generally discredited. One principal cause of this ignorance, was the known insalubrity of its atmosphere, on the banks of the river, and the consequent supposition that a similar unhealthy constitution prevailed on the sea-coast. Some men on whom fortune had frowned in other colonies, and whose minds became adventurous by the operation of despair, at length broke the spell, by exhibiting the possibility

lity of uniting prosperity and health in the flooded shores of this extraordinary country. The astonishing success of these men, held out an encouragement not to be neglected, and which soon became irresistible. From the year 1787, an emigration from the British West India islands has taken place, which, whilst it threatens the desertion of these, promises to render Demerary the most wealthy and flourishing colony in the western world. The fertility of the soil, which knows no limitation, and the ease with which it is cultivated, after the superfluous water has been drawn off by sufficient drains, has realized the rich prospects of the early British settlers; and will not fail the latter, if Great Britain secures the possession of the colony. And whilst their industry thus obtains the most ample return, their persons are not injured by an unhealthy climate. On the sea-coast health universally prevails. The European, ignorant of the circumstances which produce this happy exemption from disease, and having heard that the surface of the country, in a state of nature, is lower than that of the sea, and flooded with the waters furnished through the attraction of immeasurable forests, hesitates in his belief; and can alone be convinced by proofs drawn from experience.

The features of the country of Demerary, are
extremely

extremely singular. The successive depositions of soil from rapid and immense bodies of fresh water, have gradually produced almost the whole of Guiana. These accumulations have been at certain periods, limited by banks of sand, forming beaches, increasing in height as time, and new accumulations have been made, and withdrawn the sea from them. In traversing the country this is curiously ascertained by meeting at intervals of two or three miles, longitudinal mounds of fine sea sand running parallel to the coast, and rising in height as they recede from it. Near the present coast, they have an elevation above the common level of about two feet; at the distance of thirty miles, they may be thirty or fifty feet higher. The country thus produced by the accretions of ages, is altogether, except the sand ridges or reefs, as they are distinguished by the inhabitants, formed of the purest and most ductile clay, to an unknown depth, but possessing the peculiar quality of changing into a fine black and most fertile mould, on being exposed to the action of the air and sun. No stone can be any where met with, nor rock of any kind, except in the interior and higher reefs, where the sand has become solid by the conglutination of argillaceous earth. The astonishing fertility of this soil, in
vain

vain presents itself to the widely scattered Indian nations, in whose possession the whole country, except a strip along the sea coast, and banks of the rivers, of six or ten miles in breadth, remains: and unlimited wilds of forests are known only to the rapacious tyger,* the unwieldy tapier, the timid deer, the sportive monkey, &c. and to a variety of birds unknown to other regions; whilst the waters of immense rivers, and innumerable smaller streams, are exclusively possessed of the huge manati, the horrible alligator, the frightful camoudee, extending its enormous bulk to forty feet in many instances, and a variety of other amphibious animals and fishes.† To prepare this

* This animal is generally denominated a tyger in the colony, but improperly. The proper name is Jaguar. Tigre de Guiane of Desmarchais. Tigris Americano jaguara of Klein. Tigris Americana of Brisson. Jaguara of Piso and Marcgrave. *Felis onca cauda mediocri corpore flavescente, ocellis nigris rotundato-angulatis medio flavis* of Linnæus. See Buffon. The order of the feline tribe, according to this celebrated Naturalist, from the tyger to the jaguar, is tyger, panther, ounce, leopard, and jaguar.

† I probably hazard the implication of credulity by the following note: In the year 1797, happening to be at Governor Van Battenburgh's plantation, in Berbice, the conversation turned on a singular animal which had been repeatedly seen in Berbice river, and some smaller rivers, such, particularly, as Mahaycony and Abary on the same coast. So many circumstances, relative to this animal, were detailed by Mr. Van Battenburgh, as removed much of the disinclination

this foil for the purposes of useful cultivation, oblong square portions are surrounded by deep and broad trenches, which opening into one common

disinclination to belief I felt. This animal is the famous mermaid, hitherto considered as a mere creature of the imagination. It is called by the Indians méné, mamma, or mother of the waters. The description given of it by the Governor is as follows: The upper portion resembles the human figure, the head smaller in proportion, sometimes bare, but oftener covered with a copious quantity of black long hair. The shoulders are broad, and the breasts large and well formed. The lower portion resembles the tail portion of a fish, is of immense dimension, the tail forked, and not unlike that of the dolphin, as it is usually represented. The colour of the skin is either black or tawney. The animal is held in veneration and dread by the Indians, who imagine that the killing it would be attended with the most calamitous consequences. It is from this circumstance that none of these animals have been shot, and consequently not examined but at a distance. They have been generally observed in a sitting posture in the water, none of the lower extremity being discovered until they are disturbed; when, by plunging, the tail appears, and agitates the water to a considerable distance round. They have been always seen employed in smoothing their hair, or stroking their faces and breasts with their hands, or something resembling hands. In this posture, and thus employed, they have been frequently taken for Indian women bathing. Mr. Van Battenburgh's account was much corroborated by that of some gentlemen settled in Mahaycony and Abary. Captain Stedman, in his Narrative of the Expedition against the Revolted Negroes of Surinam, from 1772 to 1777, (vol. ii. p. 176) maintains, that the animal called a mermaid, is really and truly a viviparous fish, the female of which is furnished with breasts; that the appearance of hair is a deception proceeding from a fin running down the back,

mon canal cut into the sea, carry off all the water which originally covered, or which might afterwards render the surface too moist, if permitted to accumulate. As these trenches are subject to the action of the tide, no stagnation can ever happen, unless the current of water suffers interruption by neglect. Beyond the limits of the plantations, where dams are constructed to prevent inundation, the water which covers the uncultivated surface, often accumulates to the height of three or four feet; but the disengagement of pernicious miasmata is prevented by a canal common to two or four adjoining plantations, which continually discharging the water into the sea, maintains a constant motion in it. Notwithstanding these constant drains, the superincumbent atmosphere must be at all times loaded with moisture; and were it suffered to remain unagitated, would necessarily evolve hydrogenous gas, and hydrocarbonate, and consequently render the

of a curious construction; that the hands are fleshy fins, &c. But it is to be observed, that he drew his information from "old negroes and Indians," whose remarks, we may suppose, were not very accurate, especially as they were, whilst looking at the animal, under the influence of dread. The reader may compare this with *Lord Monboddo's* curious relations, and believe as much as he chuses of it; as what I have said comes from very respectable authority, I thought it meriting attention.

country

country uninhabitable. So dreadful an effect is prevented by the constant action of the trade-wind. The coast runs nearly S. S. E. and N. N. W., consequently a N. E., E., or S. E. wind must strike it obliquely, and drive every thing noxious, or what might be rendered so, by the immobility of the atmosphere, into the interior country, leaving the air on the coast divested of every impure gaseous fluid. This is illustrated by what happens when the wind, at any time, changes its direction, and blows from the land. In this case a most unpleasant chilliness is instantly produced and felt; but no other disagreeable consequence takes place, unless the wind should continue at westerly points, which has seldom been observed. It is the want of this salutary agitation, and the density of the woods in the interior country, which have, at all times, rendered the settlements on the banks of the rivers so extremely destructive of health, and which, at length, have directed to the necessity of abandoning them.

The climate of Demerary differs essentially from that of the islands. In Demerary the year is naturally divided into four portions, a short and a long wet, and a short and a long dry season. April ushers in, and August closes the long wet portion;

the long dry immediately follows, and continues till December; the short wet terminates towards February, and the remaining months comprise the short dry. This alternate succession of wet and dry weather favours the industry of the planter, and generally crowns it with success, without interrupting his enjoyment of health. Whilst the settlements, however, were established on the banks of the rivers, and whilst the refreshing breezes of the ocean were not felt, this alternation of great moisture and great dryness, proved a source of dreadful mortality. M. Fermin, who has wrote on the climate and diseases of Surinam, a country precisely similar to Demerary, thus speaks of the morbid quality of the atmosphere in his time, about forty years ago: “ Les saisons de l’année sont si variables à Surinam qu’on n’y peut faire aucun fond. On en distingue pourtant quatre, deux de sécheresse ou de grande chaleur, et deux de pluie. Ces saisons different principalement entr’elles par la quantité du mauvais air qui y est plus ou moins répandu. C’est dans les saisons seches et chaudes que les maladies sont généralement plus fréquentes, surtout quand la sécheresse est extrême; alors les maladies aiguës sont dans toute leur force, et la mortalité regne. L’atmosphère presque embrasée

braſée cauſe dans les humeurs une diſſolution ſi prompte et ſi rapide, que les corps les plus robuſtes ſe trouvent en peu de tems terraiſés par une tranſpiration continuelle, et ſi forte que l'eau même auſſitôt après avoir été bue, paſſe à travers les pores du corps, et qu'on l'en voit ſortir comme elle feroit d'une éponge mouillée que l'on comprimerait." A moſt formidable train of diſeaſes is afterwards particularly deſcribed, and we wonder that the Dutchman, enterprizing and partial to low and flooded lands as he is, could have had fortitude to eſtabliſh himſelf on the banks of the Surinam or Demerary, where death and diſeaſe are almoſt ſynonymous terms. * Within the laſt twenty years, later ſettlers benefiting by the fatal miſtake of the original colo-

* *Traité des Maladies les plus fréquentes à Surinam, &c.* par Philippe Fermin, M. D. Amſterdam, 1764, p. 3—18. Dr. Bancroft, in his "*Effay on the Natural Hiſtory of Guiana*," does not permit himſelf to enter largely on the medical hiſtory of the country. The ſlight ſketch he gives has a tendency to make a favourable impreſſion on the mind of his reader, although in his time (1766) the ſea-coaſt was in a ſtate of nature, and the plantations confined to the banks of the principal rivers. That he has not acted correctly in this reſpect, is rendered too evident, by the undeviating teſtimony of all the old ſettlers; and by the fate of the plantations, almoſt the whole of which have been for ſeveral years abandoned; the dreadful mortality of the negroes threatening and having actually effected the ruin of their owners. See Bancroft's *Effay*, p. 381—397.

nists, have almost uniformly established their plantations on the sea-coast. The consequence has been most pleasing, for few instances of sickness, and still fewer of mortality, have been experienced. Many plantations are totally exempt from sickness for years successively ; almost all the gangs of slaves, so far from diminishing, have greatly increased their numbers by the fecundity of their women, and the invariable health of their infants ; negroes considered incurable in the islands, from frequent attacks of the “ mal d'estomac,” are speedily restored to health and efficiency, after their arrival in this colony ; all descriptions of people exhibit the distinguishing signs of vigorous health ; and the whites, more especially, seldom acquire, or are soon divested of the fallow atrabilious complexion of the islands. The causes of this healthy constitution I have already stated : but the negroes may owe a considerable portion of it to circumstances peculiar to their situation in Demerary. 1. An inexhaustible, and in many instances, an unlimited provision of the most wholesome and nutritive articles of diet. 2. The want of clothing. The negroes are, without exception, except on holidays, perfectly naked, as far as decency will permit ; consequently perspiration is not checked,
nor

nor are their bodies ever enveloped in a moist heated vapour. 3. The ease with which the cultivation of the land is carried on, and their consequent freedom from the great exertions, necessarily exacted from their brethren in the islands; and 4. The regularity and strict discipline observed in the government of the slaves.

The moisture of the atmosphere, joined to the constant action of winds which blow on the coast, have produced a temperature very considerably cooler than in any of the islands, although placed six degrees nearer the equator, and although its surface is lower than the level of the sea. The usual range of the thermometer at noon, is from 76° to 86° ; and the medium heat of two years has been about 80° . I have not been able to ascertain the usual height of the barometer; but from accurate observations made on the pluviometer at Lufignan, the plantation of Kenneth F. Mackenzie, Esq. it appears that the medium quantity of rain which falls on the east sea coast, is about 79 inches. From the 1st April 1798, to the 31st March 1799, the rain which fell was precisely 80.68 inches, a quantity considerably less than that which annually falls in the interior parts of the country.

There are, however, situations on which a

very fatal sickness almost every year prevails, during the months of July, August and September; but it has been rendered evident, that at such periods, the neglect of maintaining a proper drainage and current in the water of the trenches and canals, has chiefly contributed to its production. The military posts are unfortunately those in which sickness has been most conspicuous; Stabroëk, at the mouth of the Demerary; and New Amsterdam, at the mouth of the Berbice; and the annual mortality in the 39th regiment, distributed between these, illustrates the observation. During the months of July and August 1796, that regiment lost 187 men; during the same months of 1797, they lost 158; and during the same months of 1798, 120 died. The inhabitants of the town, in the canals of which an imperfect drainage is too often permitted, have also severely suffered by sickness during the same periods; but, as a removal into the cultivated country on the coast, produces an immediate change from a morbid to a pure atmosphere, so when it has been practicable, mortality has seldom been the consequence. I may here observe, that the barracks in Fort William Frederick, at the mouth of the Demerary, have furnished an illustration of the doctrine

doctrine of hydrocarbonate being the basis of the remote cause of yellow remittent fever. The building consisting of four floors, is very lofty. The soldiers are quartered on the first floor, elevated about ten feet from the surface ; the officers possess the remainder of the building. In every instance of sickness proceeding from endemic causes, the soldiers have been invariably afflicted with fevers of a remittent type, distinguished often by the worst symptoms ; whilst the officers have had only slight attacks of such, or more violent ones of intermittent fever. Next to these fevers, dysenteries are the most common diseases of the year, and sometimes a dangerous pleuritic affection has taken place.

Fevers of infection were never known on this part of the South American continent till the year 1793, when the schooner Fan-fan, already mentioned as introductory of the malignant pestilential fever into Barbadoes, introduced the infection among the shipping in the river Demerary ; and, in the year 1794, when another vessel (the Hope) from Grenada carried it to a plantation on the coast. In both these instances, however, as the accidents happened, when the alarm was pretty general, means were successfully employed to prevent its spreading. In the
year

year 1796, the infection of the pestilential fever which prevailed among the troops of the St. Domingo army at the Cove of Cork, and on their passage to Barbadoes, broke out in the detachment of the 99th regiment stationed at Mahaïcka, a short time after their landing in Demerary, towards the end of the month of April. Aware of the nature of this dreadful malady, few had any intercourse with the detachment, and it became in a manner insulated; and consequently the infection did not extend beyonds the limits of the post. In the treatment of this fever, the late Mr. Macbeth in the first instances, and Mr. Ord in the last, very judiciously adopted the mercurial plan, and were successful. Others adhering to old modes, founded on supposed putrescence of the fluids, lost largely. The comparative efficacy of four modes of treatment was ascertained by Mr. Ord: 1. Bleeding, with evacuates. 2. Evacuants with antimonials. 3. Evacuants succeeded by bark; and 4. Calomel alone, and pushed to saturation. The three first were almost equally unsuccessful; the fourth seldom failed; but in so moist an atmosphere, a small quantity of calomel was sufficient to affect the salivary glands.

I shall conclude with the following extract
from

from a report made to me for the information of the Commander in Chief, Lieutenant General Bowyer, by Mr. Dunkin, the garrison surgeon, and superintendant of the Hospitals of the line in Demerary and Berbice. How attentively this ingenious gentleman observed; how judiciously he adapted his practice to the disease; and how successfully he discharged the trust reposed in him, evidently appear; and constitute an example which merits, and which, it is to be wished, may secure the imitation of other military medical practitioners similarly entrusted. The subject of the report is the causes of the sickness and mortality which took place in the garrison of Stabroëk in the autumn of 1798; and the method of treatment pursued in the cure of the remittent fever.

“ The remittent fever was to be attributed to the exhalations from low, wet and marshy grounds, the same cause that produces fevers of a similar type in all climates, but greatly more violent in their attack, quicker in their progress, and more fatal in their termination, in this climate than in Europe.

“ This season unfortunately there was a large surface presented for the generation of the noxious vapour; from the plantation next the quarters of
the

the troops being deserted, there was not the same attention paid to cleaning the trenches, or draining the ground in the camp occupied by the South American rangers; several trenches were also filled with grass, or obstructed with putrid weeds; and the noxious vapour was presented to the body in a more concentrated state, from frequent calms, and a long continuance of dry weather. That this was the cause of the fever being more general in the neighbourhood of the fort, the good effects which resulted from cleaning the trenches in the camp will make evident. These effects are shewn in the following Table.

Periods.	Admitted.	Discharged	Died.	Occurrences.
August 11th	71			
from 12th to 18th	50	18	1	
from 19th to 25th	27	40	11	
from 26th to Sept. 1st	14	12		
from 2d to 8th	14	14	1	
from 9th to 15th	14	27	1	
from 16th to 27th	9	18		

“ There was no particular feature in which the fever of the present season differed from the remittent fever of the West Indies. The tertian type, either simple or variously compounded, was the form which most generally prevailed, though

though the remissions in many were very obscure, and in several not altogether discernible, except by some slight alteration of the symptoms, some relief to the oppression or diminution of heat. The disease, in general, made its appearance between the hours of nine in the morning and twelve at noon, sometimes giving rise to symptoms apparently different from their real nature; and at others the attack was sudden, and its formation from the beginning, distinct. In July, August, and September, the fever assumed an appearance of a very malignant or putrid tendency. It is difficult to describe in words the character of this form of the disease, its discriminating marks not consisting so much in one or two symptoms, as in a certain assemblage of circumstances, residing chiefly in the eye and countenance of the patient. The face exhibits something besides the usual flushing; the eyes sad and desponding, the countenance dark and overcast, with certain marks of confusion and distress; in general accompanied with great irritability of temper, general uneasiness, frightful dreams, and distressing apprehensions. The pulse varied remarkably, obscure in some, in others, strong, though unequally so, with a peculiar vibration in the stroke. The skin was dry and rough, and the
heat

heat made a more disagreeable impression on the hand than is usual in common fevers.

“ In the mode of practice pursued, recourse was first had to cathartics ; such as could be exhibited in small bulk were generally preferred, as most likely to be retained by the stomach ; and their operation was expedited by laxative glysters frequently repeated. Should not a perfect remission take place after the operation of the purgative, Dr. James’s, or the antimonial powder was given, joined either with calomel or nitre, as the circumstances of the case seemed to indicate ; at the same time with caution not to increase the irritability of the stomach. Advantage was taken of the first remission to exhibit the peruvian bark, the quantity and frequency of the dose being adjusted only by the state of the stomach ; and if it admitted the liberal use of this remedy, though it might not always cut short the disease, it seldom failed of conducting it to a favourable issue. Cold bathing was found eminently serviceable in various instances, and under various circumstances, particularly where the remissions were indistinct ; it likewise succeeded, in general, in checking a putrescent tendency, obviating irritability, and imparting to the system a certain degree of tone and vigour. The bark is very liable
to

to be injured by keeping in this climate, perhaps from the peculiar dampness of the atmosphere. The good effects that resulted from a supply of yellow bark received from Barbadoes, convinced me of the very great advantage of having this medicine sent frequently from Europe, in small packages, and of the best quality."

Demerary, 16th Dec. 1798.

CHAPTER VI.

Tobago.

NOTHING very peculiar is presented in the appearance or construction of Tobago. In the eastern districts, the country suddenly rises into high mountains, less distinguished by conical peaks, than by ridges and craggs thickly wooded. This massy structure extends to the neighbourhood of Scarborough, and from thence rapidly declines into the low plains of Sandy-Point. We can perceive few vestiges of volcanic influence in any part of the island; but the smooth and almost level surface of Sandy-Point, and the apparent nature of its rock and soil, give room to imagine that its origin was oceanic, and its elevation above the water produced by the expansive force of subterraneous fire. Thus M. Peyre, the Inspector General of the Hospitals of the French Republic at Guadaloupe, in tracing the direction of volcanic fire from the South American continent to the Soufriere of Guadaloupe, perceived evident traces of it in this island. “ Nous pourrions le suivre,” says he, “ à travers le terrain volcanisé.”

canisé de la Grand-terre et de Marie-Galante jusqu'à la Dominique ; là, on le voit au rivage, auprès du Cachacrou, se plonger sous le canal de la Martinique, et parvenir sous la montagne Pelée, d'où il entretient les eaux thermales du Precheur et du Lamentin, et où il cause des tremblemens de terre qui l'ont fréquemment endommagée ; il paroît à la Soufriere de Sainte Lucie, sur la montagne du Oualibou, à St. Vincent, d'où il s'abaisse encore sous les flots ; on le retrouve dans les eaux chaudes de la Grenade, dans divers endroits de Tobago, et *notamment à Sandy-Point dont le terrain est parfaitement le même que celui de la Grande-terre* ; on le suit dans le sol bouleversé de la Trinité Espagnole et dans l'étang de bitume qu'elle renferme jusqu'au continent, qui dans cette partie n'est que mélange et confusion."*

Tobago,

* See the very ingenious and scarce " Rapport fait aux Citoyens Victor Hugues et Labas, Agens particuliers du Directoire Exécutif aux Iles du Vent. Par la commission établie en vertu de leur arrêté du 12 Vendémiaire, an 6 de la République, pour examiner la situation du Volcan de la Guadeloupe, et les effets de l'éruption qui a eu lieu dans la nuit du 7 au 8 du même mois." Par une commission composée des personnes suivantes : les Citoyens Peyre, Inspecteur Général des Hôpitaux ; Amic, Médecin de l'Hôpital Militaire de la Basse-terre ; Hapel Lachenaie, Chémiste-pharmacien de la première classe ; Fontelliau, Chirurgien de la première classe ; Codé,

Tobago, before the accessible land was cleared of its thick forests, and when tracts of marsh were frequently met with, was one of the most unhealthy spots in the West Indies. For more than twenty years, however, the atmosphere has been becoming gradually less loaded with miasm; the country has been highly cultivated; and whilst their wealth has been rapidly increasing, the health of the inhabitants has held an equal pace. Tobago therefore may, with a few exceptions, be now considered as a very healthy island. One of the most remarkable instances of the exhalation of marsh miasmata, and conse-

Chirurgien de la seconde classe." p. 42. Grande-terre, to which M. Peyre says Sandy-Point bears a most perfect resemblance, is, according to him, for I have never seen it myself, a flat country. "Les pierres qui en forment le sol, comme les coquilles qui en composent les montagnes, prouvent qu'elle est sortie du sein de la mer: on verra enfin, que tout paroît y avoir été mêlé, confondu, bouleversé par des mouvemens incalculables de terre." Grande-terre is, therefore, an island of a secondary formation; and we may also believe that Sandy-Point of Tobago, and the greatest part of Barbadoes, Marie-Galante, Antigua, and of Saint Croix, are likewise of secondary formation. See Rapport, &c. p. 3, 4. This work is extremely well wrote, and displays much general and chemical knowledge. It is curious, too, from its detailing the circumstances of the only well authenticated volcanic eruption in the Caribbean Islands since their discovery by Columbus in 1493. The best description of this volcano, prior to this report, is given by Labat, who explored it very minutely in 1696.

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quent fickliness of situation, is to windward of Scarborough. The swamps surrounding the Bay of Bacolet exhale the most noxious vapours; but being distant from Scarborough about a mile and a half, their effects on the inhabitants are various. Thus those residing in what is called the lower town, are often, particularly in the hot months, afflicted with the yellow remittent fever; whilst those of the upper town are affected by simple remittents or intermittents; and the garrison of Fort King George, situated on the summit of a hill behind Scarborough, by intermittents or dysenteries,

The rock of Tobago, Sandy-Point excepted, is argillaceous; and that on which the town of Scarborough stands is pure schistus, lamellated or shivery, with ochreous septa. The situation of the town is remarkably dry and declivous; its houses are much separated, or, if adjoining, they are well disposed and ventilated; and as the environs are neither much wooded, nor any where incumbered with wet or marshy ground; it cannot be considered as unhealthy in any other respect, but its being to leeward of the unwholesome atmosphere of Bacolet. Viewing Scarborough, and Tobago in general, thus—we may ask, what then has been the cause of the dread-

ful fever of 1793, which swept off almost the whole garrison, and a multitude of the inhabitants? Can we justly attribute it to endemic causes, which, long before the period in question, ceased to exist, or could operate partially, and in a degree sufficient to excite a periodical sickness, varying in description according to the elevation of the subject above the heavy vapour floating near the level of the sea?

It seems fair to conclude, from the coincidence of all accounts, that a fever, marked with such symptoms as characterised that which appeared about the beginning of July 1793, at Tobago, and distinguished by such mortality, had not been ever known there. The oldest inhabitants have no recollection of a similar event. And although the medical gentlemen, who practised during its prevalence, seem inclined to attribute it to endemic causes; yet they can assign no reason for the appearance of symptoms which are not peculiar to the worst form of yellow remittent fever. Perhaps the truth is, like most of the practitioners in the West Indies of this memorable period, not aware of the possibility of foreign causes, they thought not of enquiring after such at the time: and although puzzled with the novelty of the circumstances before them,

them, having neglected the investigation at the hour when investigation was practicable, they satisfied themselves with the received opinion respecting the origin of morbid causes within the tropics; and found it less troublesome to call in the agency of marsh miasm, than to trace the importation of infection. The general belief, however, at the time, tended to the establishment of the agency or co-operation, at least, of the latter. A ship called the *Letitia* or *Lucretia*, of Glasgow, was sent from Grenada to Tobago, about two months after the capture of the latter in April; and having the infection of the malignant pestilential fever on board, communicated the disease to the shipping, the garrison, and inhabitants. That the ship was infected was universally known at St. George's, Grenada; that she arrived at Tobago about the middle of June, was equally well known; and that the disease appeared about the beginning of July, is fully ascertained by the communication of Dr. Laing. If there had been nothing peculiar in this fever, why had it not occurred before, and why has it not appeared since? It appears that, in many instances, the disease was propagated by contagion; and one in particular has been related to me by Mr. Davies, a gentleman, who at that time acted

in the capacity of storekeeper of his Majesty's Ordnance, at Scarborough. He, and a Mr. Thraille, attended a Mr. Turner, who was suddenly seized with the usual symptoms of the epidemic, late in the month of September, and watched over him with friendly solicitude till his death on the third day. On that day Thraille was seized with the same symptoms, and died on the fourth day; and nearly at the same time Mr. Davies was likewise suddenly attacked in the same manner; but possessing more fortitude, and less apprehension, and being a native of the torrid zone, he recovered. All these gentlemen had been long resident in the West Indies. The 32d regiment, after having been employed on the unsuccessful attempt on Martinico by Major General Bruce, was sent from Barbadoes to Tobago, where they arrived in the month of July, after the fever had made its appearance among the sailors and inhabitants. In the month of December they were draughted at Barbadoes, having lost three-fourths of their original number. As this regiment lay at Barbadoes at the time the malignant pestilential fever had begun its ravages, it is not improbable that the seeds of infection might have existed among them when they were landed at Tobago.

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The following report made to me by Mr. Shannon, the surgeon of the Ordnance attached to Tobago, although it does not support the opinion of imported infection, furnishes general useful information. “Tobago, February 2d, 1798. It appears that about 80 of the royal artillery have been stationed on this island since the capture to the present time; all these have been more or less sick, and have been admitted into the hospital. The principal and prevailing disease amongst them was fever; *I never had occasion to see a case of hepatitis, dysentery, cholera, pleurisy, or, in short, any other disease worth taking notice of.* I find, during the above period, that twenty-four have died of fever, two of mortification, one of consumption, one of dropsy, and one of an accident. The general and leading symptoms of this fever, were acute pains in the head and back, and frequently in the great joints; sickness at stomach, with retching and oppression over the præcordia, anxiety and restlessness. I never heard nor saw any account of the fever that prevailed at Grenada; but from what I observed of this fever, I take it to be of the same nature of the fever I saw fifteen, sixteen, and seventeen years ago at St. Lucia and Antigua.”

“Respecting the importation of contagion into

the island, I am persuaded no such thing happened. In the first place it would in all probability have been traced to its source; and in the second place, if the fever took its rise from the immediate application of human effluvia, it would certainly be ushered in with some sudden and remarkable degree of debility in the different functions. As it did not appear at all evident, that the fever here took its rise from contagion, I can attribute the cause of it to nothing else than something peculiar in the constitution of the air."

"The sanguine and robust were the most subject to, and suffered most from this fever, and particularly the 32d regiment which arrived here in July, 1793. I did not particularly observe at what period of the fever the symptoms abated or disappeared: this depended, in a great measure, on speedy evacuations, and the early use of the bark: many, however, died the third and fourth day of the disease; but it did not strike me there were any critical days."

"In the treatment of this fever, my first care was to procure an evacuation of the corrupted humours, and for this purpose I preferred a solution of the natron vitriolat. in a pint of water, to which I added two grains of antimon-tartar. This I gave in small dozes every half hour, and it seldom

dom failed to operate copiously, both upwards and downwards, in the course of two or three hours; *and without waiting for the fever to put on any regular form, I made use of the first intermission* to throw in the bark. I sometimes followed up the saline medicine with small dozes of James's powder, adding occasionally calomel. Sometimes the warm bath was recurred to, and in obstinate vomitings, I gave five or six grains of calomel made into a pill. Upon the whole I trusted more to the warm bath and the bark, than to any other remedies, considering the last as the best, and the most to be depended on. I found good effects from the vitriolic and nitrous æther with the bark, and sometimes from the saline draughts in the act of effervescence. I never gave calomel with an intention to salivate; I never had occasion to make use of the lancet; nor have I ever made use of the cold bath: in no instance was salivation excited intentionally or otherwise. The bark and steel, and a nourishing diet, I found useful as restoratives, &c."

It is worthy attention, that by the Ordnance Hospital reports from 1st July, 1796, to the 30th September, 1797, it appears, that of 97 patients admitted, only seven died, consequently, of the number of fatal fever cases stated by Mr. Shannon

Shannon to have occurred from the 1st of July, 1793, to 2d February, 1798, seventeen at least must be referred to the period prior to the 1st July, 1796. This furnishes a strong proof of the insufficiency of the remedies generally employed in the remittent fever, in that which occurred in this gentleman's practice in 1793, and consequently goes far towards the refutation of its supposed endemic origin.

The following particulars have been obligingly stated by an ingenious practitioner, many years resident at Tobago, before the period in question, Dr. Laing, in a letter dated the 10th November, 1798.

“ About the beginning of July, 1793, great numbers of white people were taken ill of a fever of a most malignant kind. I have not any reason to doubt its originating in the country, and not being an imported disease. I have never met with any one instance of fever in the West Indies, that I had any reason to believe to be contagious, as I never found either medical people, nurses, or other attendants upon the sick, when epidemical fevers have raged, both in Tobago and St. Lucia, attacked with such fevers in greater proportions than others who had no occasion to approach near, much less come in contact

tact with the bodies of the sick. *The disease*
did not begin in the lower town: but such was
 the mortality of the fever that raged here, that
 many of the patients died in 60 or 80 hours
 from the time they were in perfect health; few
 survived the week, and those who did generally
 recovered. Yellowness of the skin and eyes,
 at least to any great degree, seldom occurred.
 Clammy cold sweats were very common. The
 head was seldom much affected. There was no-
 thing in the stools or urine any way remarkable.
 In the beginning of the disease the pulse in ge-
 neral was full, firm, and regular, to such a de-
 gree as tempted me, in many instances, to use
 the lancet; but in no instance did I find it pro-
 ductive of any good effect; the pulse in a few
 hours becoming quick, small, and irregular, and
 the stomach irritable to an extreme degree.
 Upon the first appearance of the disease, early
 in July, I sometimes ordered a vomit of tartar
 emetic, but soon desisted from a practice which
 I found either occasioned, or at least aggravated,
 that irritability of stomach, so general and so
 untoward a symptom. Bark I seldom found
 of use, and indeed the patient's stomach would
 seldom retain it. Purgatives, in general, where
 the stomach retains them, produce copious eva-
 cuations;

cuations ; and, in general, I found calomel, with purging apozems of salts, manna, and tamarinds, to answer best. Large blisters to the region of the stomach were productive of good effects sometimes. The black-vomit was a very common, but not always a fatal symptom."

CHAPTER VII.

Trinidad.

THIS is the finest and largest island of the Caribbean Archipelago, and possessing the additional advantages of bays secure from all the prevailing winds; of considerable rivers, which facilitate the draining and cultivating the low rich lands; and of being entirely out of the tract of hurricanes; it becomes an object of magnitude to secure the cession of it to Great Britain. In tracing the figure and the relative situation of this island, and the singular rocky islets which cover the approach to it; in considering the high granitic and argillaceous mountains which constitute its barrier against the encroachments of the ocean, on one side, and the gradual declivity or perfect level of its surface, on the other; when we compare this formation with the circular and extensive gulph which it shuts in on the eastward, the bituminous lakes and exudations, the spiracles of moffete and sulphureous springs which characterize a large portion of its lee-shores; and
when

when we perceive that a similar construction obtains on the main which incloses the remainder of the gulph; we hesitate not in referring these peculiarities to a volcanic origin. Trinidad disrupted from the continent by earthquakes, the intermediate space, formerly the center and focus of the subterraneous fire, sunk into the vast cavities formed by it, and gave place to the waters of the Oroonoko on one side, and those of the ocean on the other. Thus the beautiful, the unruffled, and the extensive gulph of Paria was formed. The rapidity and immensity of the stream of the Oroonoko, loaded with soil from the interior country, deposits it where its current is most obstructed. The accumulations from a period far beyond the stretch of tradition, have filled up a considerable part of the gulph on the lee-shores of Trinidad; and from them its extensive savannahs, and low wooded and flooded plains derive their origin and growth. The windward and eastern side of Trinidad exhibits one continued bold shore, suddenly rising into a long chain of beautifully wooded mountains, characterized by elliptic swellings, and no where marked with conical peaks, or precipitous breaks. But the approach to the Boccas del Drago presents a grandeur of scenery wonderfully striking; the heights

heights of Trinidad on one side, the mountainous extreme point of the province of Paria on the other, the sudden breaks formed by the interjacent mountainous and rocky islets, the four channels which open into the gulph of Paria, are objects of great magnitude and beauty most picturesquely disposed. Having passed through the mouths of the Dragon, and opened the southern and western coasts of the island, a new and most beautifully variegated scene suddenly breaks upon us. To describe it is difficult, to perceive the impression of it is delightful; but alas! like all other low, lee tropical countries in a state of nature, it breathes forth on the unassimilated the vapours of disease and death. In this view, Port St. Joseph or Port d'Espagne is a conspicuous object. Between the point of Naparin and that of the Carenage, lies a very broad bay, but so shallow that vessels of any size must cast anchor more than two miles from the shore. At the bottom of this stands the town on a plain of small extent, extremely incommoded with marshes, which are still permitted to exhale their noxious miasma, although capable of being cleared, drained, and cultivated. The plain is shut in on the windward side by hills of considerable height, and in front a tract of many miles of mud, covered with
innumerable

innumerable impurities, is exposed to the exhaling influence of a fervid sun during twelve hours of every twenty-four. The town itself is large, and divided into streets disposed rectangularly; but the houses built of wood or mud, are, in general, mean and inconvenient. The very summits of the adjoining hills are so affected by the pernicious vapours which arise from this marshy and muddy surface, as to be rendered uninhabitable. On one of these a considerable fortress was begun, but the mortality among the workmen was such, as obliged the engineer to relinquish the project. A Spanish engineer, some time before the capture of the island, with equal judgment and humanity, and with a degree of rapacity which knew no bounds, planned and executed a singular piece of masonry in the midst of the muddy surface lying before the town, which has been distinguished by the name of citadel, although incapable of containing thirty men; a tomb was thus erected for our troops at an expence so enormous, that it was said to have been built of dollars, one turret of it having, it is said, cost 80,000. The hand of industry, however, requires only the fostering aid of a mild and equitable government to render Trinidad as productive as it is beautiful; and these, con-

jointly,

jointly, would soon give that salubrity to its atmosphere, the most fertile country must be wretched without. The extensive savannahs, although incapable, from the shallowness of their vegetable mould, and from their substrata of sterile grit or gravel, of useful cultivation, might become the unfailing nursery of cattle for the West Indies; the flooded woody lands, the “terre aquatique,” are composed of rich deep inexhaustible soil, capable of being permanently and extremely productive, when freed from their superfluous moisture by drainage; and an incalculable fund of wealth, and a proportional augmentation of purity of air, might be acquired from the shallows which constitute the prolongation of the terre aquatique, by the judicious application of labour to restrain the tides, and to carry off the inclosed waters by canals terminated by sluices. The higher tracts are healthy, and little less productive than the plains.

Until these important changes are effected, Trinidad must be, as it ever has been, destructive to the human constitution. The aboriginal inhabitants, the Indians, of whom only about a thousand have survived the effects of European oppression, have always, almost instinctively, avoided the low, and resided on the elevated grounds.

From endemic morbid causes they have consequently escaped, and such as associate with the settlers, bear in their countenances, and in the contour of their persons, the signs of vigorous health. The Spaniards, little given to the habits of industry, were but partially exposed to the endemic causes of disease; the French found their temperance a tolerable security against them; but the English, who here found a refuge from merciless creditors, or a deposit for property, which, without offending the laws of their country, they could not enjoy under a British government, have also, in many instances, found a premature grave. Dissipated habits and a peculiar mode of living, conjoined with the energy of the honest and industrious, or the inactivity or torpor of the flagitious and indolent, proved equally fatal, in the low lands, where the acquisition of property required the smallest advance of money. Why, however, a situation subject to the pernicious exhalations of immense tracts of marsh, and with a depth of water scarce equal to the admission of a boat even at high water, should be chosen for the seat of government, for the establishment of fortresses, for the emporium of commerce, in preference to the fine harbour and healthy country surrounding it, of Gasparine, is altogether incomprehensible.

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The usual diseases consequent upon an exposure to marsh miasmata are here frequent during the hot and wet months. Remittents, intermittents, dysenteries, hepatic affections, and cacochymic diseases. During the short space of time, from February, 1797, when Trinidad was captured, till January, 1798, upwards of a thousand British and foreign soldiers, in British pay, have perished at Port d'Espagne. The principal causes of this mortality, next to the violence of the original diseases, were the continual presence of the miasma which produced them, and an unappropriate treatment. In diseases of violent reaction, and so much depending on visceral derangement and glandular obstruction, what could be expected from the operation of trifling quantities of camphor, nitre, and antimonials? What from bark alone, or when seconded by simple evacuation? During convalescent debility an attempt has been made to obviate the effects of the presence of the remote cause, by removing the patients to a wretched mud building, standing on the hill behind the village of St. Joseph, inland, and distant from Port d'Espagne about seven miles. All attempts of this nature have been imperfect in our armies. If the situation, as the present one, has been good, the accommodations have been bad and confined; or, if both have

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been

been well calculated to produce the desired effect, that has been prevented by the neglect of cleanliness, the want of proper ventilation and nourishment, or the generation of moist and injurious exhalations from the trees, bushes, or weeds which have been permitted to remain or grow.

My information respecting the introduction of infection, and of the consequent prevalence of a fever depending on it, has hitherto been imperfect. That, however, the malignant pestilential fever of 1793 prevailed at Port d'Espagne, and was propagated by fomites brought from Grenada, is a fact well known to the inhabitants of both islands. A constant commercial intercourse subsisted between St. George's and Port d'Espagne; the infection was carried by one or more vessels from the former to the latter; it raged among all descriptions of the inhabitants, and in an especial manner among the French emigrants; in quarters of the island remarkably subject to the action of endemic causes, the disease did not appear; the symptoms described by medical gentlemen who practised at Port d'Espagne during the prevalence of the fever, were precisely the same as occurred at Grenada; and in the medical treatment of it, calomel pushed to such a length as
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affected the mouth, proved uniformly successful. This is the substance of the communications I have been favoured with from eminent medical practitioners settled at Trinidad for several years, and from gentlemen commercially connected with the island at the period in question. Among the former, I am particularly indebted to Dr. Andrew Clark, who politely answered several queries I proposed, to elucidate the subject. This gentleman stated, in general, that "the malignant fever was first brought to Trinidad by the trading vessels to and from Grenada, and did not extend to the main, nor even into the country, but was confined to the town and shipping in harbour; that the symptoms in general, but more especially in those cases which proved fatal, were a general loss of strength, violent head-ach, and soon afterwards delirium; an hour or two before death, a general hæmorrhage, from the nose, eyes, and ears; those cases in which the patients survived, were marked by the same symptoms, but in a milder degree; that the treatment was various; in some cases, bark, with elixir of vitriol, in large quantities; in others, calomel to such a degree as affected the mouth; and when there was time for that, those cases did well."

This treatment Dr. Clark adopted, finding it

uniformly successful, when employed with the necessary boldness. He adds, "that the fever raged with great violence among the Spanish soldiers, and among the sailors of several Liverpool ships, belonging to Mr. Dawson, particularly the Duke of Leeds, although they lay beyond the reach, and out of the usual direction of marsh effluvia blown from the land."

CHAPTER VIII.

Grenada.

SINCE the year 1794, this devoted island, together with the scourge of pestilence, has cruelly experienced all the evils, which an insidious, a merciless intestine enemy could devise and give efficacy to. Blessed with abundance of those things, which are considered as the necessities of life, united under a mild and fostering government, and enjoying that tranquillity which their unhappy neighbours in vain looked for from the machinations of designing and unprincipled demagogues, or from the dreams of theorists in philanthropy, their only wish was to be permanently relieved from the infection of a disease which had hitherto but imperfectly yielded to the best means which could be suggested. The usual series of such awful visitations was however reversed; pestilence began the career, civil war augmented, and famine, for a time, combined with these, seemed to complete the measure of their misfortunes. The year 1795

produced a scene of horrors seldom equalled. Confined to the narrow limits which their arms could command, almost all the inhabitants of the island were exposed to the common calamity. The certainty of massacre, should they remain on their plantations, drove all the inhabitants of the country into town, where an almost equal certainty of falling victims to pestilential infection awaited them. The great increase of new subjects to act on, which thus took place, augmented the virulence of contagion; and seconded by fear, fatigue, a privation of accustomed food and comforts, despondence of mind, intemperance, and wilful or unavoidable irregularities of conduct, gave rise to even a greater mortality than marked the two preceding years. The young and the aged, the unhabituated and the assimilated to the climate, the temperate and the dissipated, equally suffered by it. People who had hitherto carefully avoided the sources of infection, and had scarce ever visited the town, since the introduction of the pestilence, now perceived that their sedulity had only warded off, not prevented the evil hour. Men who had long resided in the climate, and considered themselves as secure against the attacks of the usual diseases incident to it, found that assimilation to
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climate was no security against the indiscriminating malignity of this contagion. Those who from a peculiarity of constitution had escaped infection hitherto, now fell sacrifices to it. The contagion pervaded every quarter of the town; the fortresses were as usual particularly exposed to it; the ships employed in the departments of government, more especially the hospital ships, became sinks of pestilence; but, as formerly, the resorts of low dissipation seemed to possess it in a degree of concentration, almost peculiar to themselves. Whilst this calamity threatened universal destruction, an unhappy contrariety of opinions, a want of decision in the measures pursued, the formidable appearance of a barbarous and implacable enemy, to whom these circumstances gave a strength which, if properly exerted, must have proved fatal; prevented the general mind from perceiving, or adopting the means of eradicating the infection. Almost every house was considered as the abode of death; the intercourse of the inhabitants, therefore, experienced an almost total cessation, except when defence against the common enemy demanded united exertion. Funerals were not permitted, or were not attended; and in most instances the bodies of the deceased were dragged out to sea, and deposited

posited in a watery grave. In short, were the calamities of the inhabitants of Grenada, at this period, compared to those of the people of Attica, so eloquently described by Thucidydes, during the early part of the Peloponeffian war, perhaps the only difference between them would be found to be the smaller population of the former country, which may have rendered the horrors of its situation less an object of public notice, although their nature and comparative extent may have been precisely the same. The picture drawn of these horrors at the moment when they most pressed on the mind (11th August 1795), in a letter from my partner Dr. Campbell, may show that I have not represented them in heightened colours. “ I am happy to find you are still in a country where you can go to rest without the dread of having your throat cut before morning, which is more than any person in this unfortunate island can say since the 3d of March last. You cannot possibly form any idea of the miserable situation of this country; fire, sword, pestilence and famine stare us in the face on all sides. Since the commencement of this unfortunate business (insurrection) upwards of one-half of all the white inhabitants of this island, able to bear arms, have either died
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of disease or been killed. I say this not from any vague calculation, but from the regular returns of the different regiments of militia. That most dreadful of all diseases, the Boulam fever, rages with greater violence than ever, and many, very many have been its victims. The St. George's regiment of militia, which you know consisted of above 500 men, is now reduced to somewhat under 100, and the greater part of these are people of colour. The regular troops are in the same deplorable state; the 29th regiment, on Richmond-hill, has lost since the 1st of May, 200 men by the fever alone. In short, our situation is such, that unless we have a very speedy reinforcement, the few that remain of us will be obliged to abandon the country entirely. Every dwelling-house in the island has been reduced to ashes long ago, excepting the circle from Spring's estate, round to Clerk's Court, by Point Saline, and that merely in consequence of a military post established at the latter. People who have been in the custom of living in affluence, are now reduced to the painful necessity of accepting a daily allowance of salt provisions from the public, to keep themselves and their families from starving."

At some of the bays where it was necessary to
 establish

establish posts, but which, from the causes mentioned, successively fell into the hands of the enemy, a morbid cause of a different nature, but little less destructive in its effects, prevailed, the miasmata of marshes. The military were alone exposed to these, and as the troops were, almost without exception, new levies, and had no time given to them for the tranquil process of assimilation after their arrival in the climate, the mortality was immensely great. Medical gentlemen of observation and ingenuity, who had for more than twenty years practised in the districts where marsh miasmata, and the diseases proceeding from them, most prevail, availed themselves of the opportunity which this diversity of causes presented, to ascertain the distinguishing symptoms produced by each. Their assiduity in the cause of humanity promoted that of medical science. Dr. John Stewart, the oldest and one of the most respectable practitioners on the island, Dr. Paterson, and several others, were satisfied that infection, or the effluvia emanating directly from human bodies labouring under contagious or pestilential diseases, constituted the cause of the fever which ravaged the town, and posts immediately depending on it; whilst marsh miasmata, or the exhalations from marshes, and stagnant water,

water, produced the fevers which fatally prevailed at the out-posts ; and that the pestilential fever then existing was nearly and truly the same they had seen and treated the two preceding years. The unanimous assent of the most enlightened and judicious part of the community, not professional, and not suspected of bias in the investigation of the remote causes of the prevailing fevers, confirms an opinion thus founded on experience and observation. A further confirmation of this, arises from the success experienced by the medical gentlemen charged with the care of the military hospitals. In the Ordnance Hospital, directed by the late Mr. William Campbell, out of about 200 cases of the malignant pestilential fever, 21 died, consequently the proportion of mortality was as 1 to about 9.5. All these cases were treated with calomel boldly administered, and occasionally joined with antimonials, and latterly seconded by the cold bath. In the general hospitals, during the year 1795, under the direction of Drs. Shuttleworth and Riollay, staff physicians, the latter of whom fell a sacrifice to the disease, almost all the sick perished. The treatment pursued was either founded on no rational principle, or consisted of copious bleeding and evacuation, and the use of cordials

dials and tonics. In these hospitals afterwards, during one period, viz. from 1st May to the 31st August, 1796, the proportion of mortality in this disease was as 1 to 4. The treatment was desultory, but generally founded on depletion, succeeded by tonic remedies. From this time Mr. Horne, the garrison surgeon, had generally the charge of the hospital at St. George's, and having followed pretty nearly the plan of treatment pursued by Mr. Campbell, lost in the proportion of about 1 to 7. At Guyave, where the 57th regiment lay, after the total reduction of the insurgents, the whole regiment, in the course of three months, experienced the baneful effects of this, probably in many instances combined with endemic morbid causes. Of this fine corps 600 in this short space perished. So dreadful a mortality is chiefly to be ascribed to the absurd treatment pursued by the medical gentleman charged with the superintendence of the hospitals of that district. His sole remedy was bark. On this he obstinately depended, and had it administered in every possible manner and form. This gentleman was an old West Indian practitioner, and had often, during the years 1793-4, witnessed the efficacy of the qualified antiphlogistic plan in the treatment of the malignant

lignant pestilential fever, although he never admitted it into his own practice. The event was, as on the present occasion, fatal to multitudes who, unhappily for themselves, were thus the victims of the misplaced confidence of others, or of their own. He at length, in the month of February, 1797, exhibited in his own person the fatal consequence of such criminal prejudice or vanity in medicine, and of so preposterous a practice. Mr. Campbell, who was a private practitioner at the same time he had the charge of the Ordnance Hospital, assured me, that he lost scarce one patient in this line of practice. The cases were always recent, when he commenced his treatment, and the care in general was infinitely superior to what can be expected in a military, and, perhaps, a crowded hospital. Calomel was here more exclusively employed than in his military practice.

I have much satisfaction in presenting the following judicious remarks on the pestilential constitution of 1795, 6, and 7, which the ingenious and observant writer of them, Dr. Paterfon, favoured me with.

“ 1. Since 1794 no importation of infection is supposed to have taken place ; it has been, and still is generally admitted, that the disease re-
appeared

appeared as soon as the latent fomites had sufficient materials to act upon, by the arrival of strangers from a cold climate.

“ 2. Contagion has been considered as the cause of the fatal fever which appeared during the years 1795, 96, and 97, in the manner above-mentioned; and to no other cause whatever could the extraordinary mortality of these years be fairly attributed, as it universally occurred during the most healthy months of the year, and the least subject to the endemic diseases of the climate.

“ 3. No distinction has been ascertained between the prevailing fever of St. George's and Grenville, before the destruction of the latter town. The importation of infection into the latter place from the former, is established beyond a doubt, in the person of Captain Remington, who was one of the first who waited on Captain Cox of the Hankey, on his arrival, and caught the infection on board, which he carried with him to Grenville, and to which he soon fell a victim, with many others to whom the disease was communicated.

“ 4. The accession of inhabitants from the country to St. George's, in 1795, when the insurrection obliged them to fly to the capital for safety,
certainly

certainly served as an exciting cause of this fever; to which may be added, the embargo laid on the American vessels at St. George's, suggested by motives of policy and prudence, by which a number of men from a cold climate were exposed to the contagion, of whom, notwithstanding every possible assistance was given them, about 70 lost their lives, as well as many of the refugees from the country, who were perfectly inured to the climate, and who had frequently withstood the attacks of the endemic remittent.

“ 5. In 1795, the symptoms usually reckoned pestilential, such as buboes and carbuncles seldom appeared; the ulcerated state of the scrotum, with an acrid and offensive discharge, very frequently, both in favourable and mortal cases.

“ 6. No disease appeared particularly predominant at the time this fever produced its ravages. During the autumnal months, the military were almost annihilated by the remittent and dysentery at the out-posts; witness the fate of the 1st. battalions of the 25th and 29th regiments, which lost about five-sixths of their number in ten months after their arrival.

“ 7. Bleeding was seldom practised in this fever, from the rapidity with which a state of debility followed that of reaction. Purgatives

were universally given, and found beneficial. Blisters, applied before determinations took place, were attended with the best effects; afterwards they were of no avail. Mercurials, especially when combined with James's powder, so as to keep the skin and bowels open, were productive of considerable advantage; more particularly, if preceded by blisters, to obviate congestion in the head, and irritability of stomach. Cold bathing was not commonly made use of; when early applied, it was generally found serviceable by supporting the tone and vigour of the system, by which time was gained for other remedies to take effect.

“ 8. The same fever at Grenville and St. George's, I believe, was treated in a similar manner during its continuance at both places. The remittent which took place towards the end of the year, when the infectious fever was on the decline, was treated in the usual way with evacuations and bark.”

Although Dr. Paterfon (5) states that buboes and carbuncles seldom appeared during the presence of the malignant pestilential fever of 1795, I have been assured by the gentlemen of the military hospitals, that, in their practice, these symptoms very frequently, or almost constantly, appeared in 1795 and 1796.

CHAPTER IX.

Dominica.

DOMINICA presents a specimen of “un-
tamed nature” in that style of greatness
wherein we are not struck with the novelty or
beauty of the sight, but with that rude kind of
magnificence which appears in many of these
stupendous works of nature, and which, there-
fore, Mr. Addison assigns as one of the causes of
the pleasures of imagination.* Taken collec-
tively, the island appears an enormous confused
mass of mountains, varying in height from mo-
derate altitudes on the coast, to elevations said
to be equal to more than 6000 feet from the le-
vel of the sea, in the interior country. These
mountains are variously formed, some truncated,
some conical, some rounded or elliptical, some
terminating abruptly in plane summits; but the
prevailing disposition of them constitutes a cha-
racter different from that of those of the other
islands; for the highest are supported by those

* Spectator, No. 412.

less elevated in a gradual decrease, and resemble huge buttresses propping still more enormous edifices, in successive ranges. The singular confusion which appears in the formation of this island, renders it a difficult task to define its description. It is related of a late Lieutenant Governor, when desired by the King to give him an idea of Dominica, to have taken a sheet of paper, and gathering it up in his hand into confused folds, to have thrown it before his Majesty, informing him, that that was the best description he could give of it. Whether this mode of description was resorted to or not, it was certainly a most ingenious idea, and conveys the general outlines of the island more perfectly than language can do. A closer view of the country only serves to confirm the idea already formed; and a surface so irregularly disposed being ill adapted to agricultural purposes, is consequently found in all its native rudeness. But although industry meets with little to compensate its exertions, however intense, or however modified, yet no country furnishes a more ample range for the eye of the picturesque painter, nor scenes more calculated to gratify the amateur in the pleasing plastic art. The grander scenes of the interior country, the cautious traveller will leave to the observation

tion of the adventurous inhabitant to whom habit has rendered their horrors and their dangers familiar. Satisfied with the environs of Roseau, he dwells with peculiar pleasure on the objects which they comprise, and casts an eye of delight on the singular beauties of the valley distinguished by the same name. A semi-circular chain of mountains, discontinued only where the river sucks a passage to the sea, encloses an extensive gently declining plain on which the town of Roseau stands, rendered beautiful by the regular distribution of its streets and houses, by a fine intermixture of trees, by gentle swellings covered with verdure, and by the windings of a comparatively large and rapid river ; the surrounding mountains are clothed with wood, and those parts of the plain not occupied by the town, are distributed into cane-fields, or pastures. The plain of Roseau gradually narrows into a valley, not 400 yards in breadth, through which the river Roseau rushes with considerable impetuosity, but with a pure stream, and on a rocky or pebbly bed. The entrance into this valley is formed by a bold projection of Morne Bruce on one side, and the extremity of a sloping ridge of rocks, at the foot of which the river has excavated a channel, leaving an abrupt, precipitous

and naked face on the other. The valley afterwards winds between too irregular lofty screens of perpendicular or inclining rocks, in some places naked, in others covered with fine hanging woods, in the best style of picturesque gloom. But the projections, every where abrupt and bold, and in some places intercussating each other, and forming seeming terminations of the valley, which suddenly again opens, constitute the finest objects, and produce an effect singularly grand and magnificent. An intermixture of naked rock and hanging wood, small plantations perched on apparently inaccessible pinnacles, a large brawling stream winding at bottom, and the whole closed by the distant view of an immense conical mountain called Morne Verte, add considerably to the pleasing impressions made on the mind by the general features of the valley.

Des aspects où les yeux hésitoient à choisir,
Varioient, suspendoient, prolongoient leur plaisir.*

The influence of volcanic fire is obvious throughout the island of Dominica, but is more particularly remarkable where solfatenas exhibit unequivocal traces of it. The mountain, called the Soufriere, near the coast on the south-west

* Les jardins de l'Abbé de Lille.

fide, is the best known, though, I believe, not the largest volcanic remains. Dr. Clark has entered fully on this subject, and in his topographical description of the volcanic country, as well as in his analysis and medical history of the hot springs, has presented his readers with much interesting information.

In the inhabited parts of the country, only two places are rendered destructive to health by marshy exhalations; and both being unfortunately considered as posts of superior importance, are occupied by the troops. The principal of these forms one extremity of Prince Rupert's Bay, and is distinguished by the name of the Cabrets of Prince Rupert's head; the other is a small bay on the windward side of the island, called Hampstead. The country surrounding the fine bay of Prince Rupert is, except towards Point Ronde, one almost uniform rude uncultivated mass, thrown into huge mountains and corresponding glens and gullies. The Cabrets form the western extremity, and are certainly most singular objects. They are two nearly insulated truncated cones, perfectly connected at their base to each other, by an interjacent dry valley, and to the main land by a low marshy isthmus, about 600 yards square. At the bottom

of the bay stands the wretched fishing village of Portsmouth, almost surrounded by marshes, or a country totally neglected. Why are not effectual means employed to render our posts of defence in many of the West-India islands, as salubrious as they are tenable? What does this cruel, this impolitic neglect proceed from? Is it indolence, is it apathy to every sentiment of humanity? Is it the centering impulse of gain, which eradicates all the finer emotions? or is it the ignorance of the topography of our foreign possessions with respect to health and disease? The view from the inner Cabret naturally suggests these questions. Its practicability raises our regret, that hitherto no effectual attempts have been made to drain a marsh which has been for many years the cause of the death of thousands of our brave countrymen; and our indignation is roused, when we learn that the worst of motives has continued the evil. Two gentlemen of the neighbourhood, I am told, fully aware of the ease with which it might be effected, and of the advantages they would derive from draining and cultivating this destructive spot, made application to the Board of Ordnance for a grant of it. The prayer of their memorial was readily obtained, and measures were accordingly taken
to

to effect their purpose: but from jealousy, or from motives of a blacker hue, the Governors of the island have disputed the authority of the Board of Ordnance, and refused to give them possession. This opposition is the more extraordinary, as the value is inconsiderable, put in competition with the number of useful and valuable lives which might be saved by draining this marsh. It has been the source of infinite mischief ever since the post was chosen for the defence of Dominica. Lives innumerable have been lost, yet still it remains in almost its original state. I say almost, for some years ago, Mr. John Laing, now of Demerary, employed in the superintendence of the works, humanely displayed the possibility of rendering the post healthy, by a very successful but partial attempt to drain and cultivate this spot. I understand the business has been more warmly taken up by the Board of Ordnance of late, and that a prospect is now held out of preventing the annual ravages committed by the yellow remittent fever on the garrison of Prince Rupert's.

The basis of Dominica is granite of a gray or blue colour, containing much shöerl and quartz, and a considerable portion of black mica. Argillaceous rock is every where found over this, except

except near the summits of the mountains, where rains have washed it away and exposed the granite. Tufa is by no means uncommon, particularly in the volcanic districts. A different structure, however, sometimes obtains; and one of the most remarkable deviations is Morne Sorciere, the bare and perpendicular side of which forms part of the country surrounding the magnificent bay of Soufriere. Sorciere is a conical mountain 600 feet in perpendicular height, rising in another mountain of a truncated form; both entirely composed of a collection of varied rocks. The arrangement is singular; and the whole being exposed to view, is easily ascertained. The strata of the conical part of the mountain, properly called the Sorcerer's or Witch's rock, are columnar and white, probably a production of the adjoining volcano; underneath these the strata are horizontally disposed and evidently argillaceous; and the substratum or basis of the whole, is a confused congeries of argillaceous rock, earth, and sand. Whilst examining the romantic scenery of this bay, my conductor informed me of a tradition which has been handed down from remote generations among the Caraïbs of the island, the remains of whom still occupy the district of Salibier in La Soye quarter—200, a wandering, in-

offensive,

offensive, indolent, timid, and faithful race. A new species of punishment for the infidelity of their wives was practised on this tremendous precipice. The victims were dragged to the conical peak and precipitated from it into the sea. But at length a frail female had the address to relieve her countrywomen from the vengeance of their injured husbands. Whilst, regardless of every other concern, the Caraïb, anxious to vindicate his honour, prepared the wanton for the dreadful leap, she grasped his body, and made him share the fate intended for her alone; and thus, literally,

“ ————— Leaping from above,
Their flames extinguish, and forget to love.”

From that moment the punishment was disused. It is singular that, in several of the islands where large settlements of the Caraïbs were established, similar precipices were applied to similar purposes. At St. Vincent the Lover's Leap projects into the sea, and recalls to the classic observer

Leucataë nimbofa cacumina montis.

In the present age, so prolific of conjugal infidelity, the employment of the Caribbean remedy might have a beneficial effect, with the substitution of the vile seducer instead of the unhappy husband.

Dominica is remarkable for the first successful attempt

attempt to propagate the clove in the British West India Islands. Mr. Bouie, an indefatigable and ingenious botanist, about ten years ago accidentally discovered a peculiar fitness in the soil to the raising this plant; and having fortunately procured a large supply of seed cloves from Cayenne, turned his attention to the cultivation of them. His exertions have been so successful as to make this a national object. He has upwards of 2000 bearing trees, beautifully arranged into square fields, separated from each other by hedge-rows of cinnamon trees. He has also successfully practised the Asiatic mode of barking the cinnamon tree; and, upon the whole, requires only the countenance of a generous public to render the clove and the cinnamon objects of commerce from Dominica. In the early stage of his trials of the former, he made use of artificial heat in the curing them. Whilst employed in this operation, he never enjoyed more pleasing sensations. A considerable time before, his health had been languid; and an asthmatic affection of his lungs rendered respiration often painful. Whilst the effluvia from the cloves was diffused through his house, the elasticity of fibre, his general health, and freedom of respiration, were remarkably improved; an effect which continued long

long after the drying of the cloves had been completed.

The endemic diseases of Dominica have nothing peculiar in them; and as they seldom occur but in situations exposed to the exhalations of marshes, they may be attributed to them in general. But in an island so extremely wooded, and so little cultivated, the atmosphere must be loaded with moisture, and diseases proceeding from such a state must exist. Where, too, brush wood and weeds are permitted to grow in the neighbourhood of barracks, remittent fevers and dysenteries during the warm months must be the consequence. Morne Bruce is a remarkable instance of this. Dispossessed of every thing on its surface, and in its situation which can render it an unhealthy post, the neglect of cutting down an immense quantity of brush wood which had been permitted to grow, and of clearing the surface of long grass and weeds, gave rise to a fatal remittent fever in the warm months of 1797 among the soldiers of the 45th regiment. The marsh to windward of the West India Gibraltar, as they have been called, the Cabrets of Prince Rupert's Head, has been a never-failing source of the most deleterious miasmata during the hot months of every year. In want of salubrity of
situation

situation this post is little inferior to Morne Fortunée of St. Lucia. The year 1793 was productive, however, of a new fever, which, notwithstanding the arguments employed by Dr. Clark, gave decisive manifestations of its peculiar nature and foreign origin. The result of assiduous enquiry on the spot, I shall here lay before the reader.

Dr. Fillan informed me that the disease appeared in the town of Roseau in the month of June, 1793; that the symptoms were precisely the same as those described by me; that all descriptions of persons were subject to it; that those lately arrived from a cold climate were, however, most obnoxious to its attack; and that he imagined he could perceive nothing contagious or infectious about it. On questioning the Doctor closely on this subject, I perceived that no conclusive or well-founded reasoning could be adduced in support of the assertion. Dr. Fillan has been an eminent practitioner in Dominica for near twenty-four years, and during that long period, he assured me that no disease, in any respect similar to that in question, was ever seen or heard of by him; and that the appearance and disappearance of it in 1793, were equally sudden and equally extraordinary. How then did it thus suddenly

suddenly appear, although at no period before seen in the island? To this no answer in the smallest degree satisfactory could be given; for what conclusion can be drawn from the unsupported assertion, that it probably proceeded from a peculiar temperament or constitution of the air at that time; or from an unqualified reference to the morbid constitutions of the air at St. Domingo of M. Desportes; a reference besides, which does not apply to Roseau, for similar epidemical causes do not exist in it. The town of Roseau stands on a declivity very gentle, the soil is altogether gravelly or placed on a stratum of terrace, and when rain falls it is instantly absorbed; no marshes are now any where in the neighbourhood, consequently diseases deriving their origin from such sources cannot have place; and when it is considered that the island of Dominica, in general, and Roseau, in a more especial manner, are reckoned amongst the most healthy in the West Indies, the question again recurs—How came the fever of 1793 thus suddenly to break out? And we perceive no more elucidation from being told that the emigration from Guadaloupe and Martinico to Roseau, occasioned an uncommon crowd, a great degree of inattention to cleanliness, and an hitherto unknown

known scarcity of food ; for islands where these consequences of French emigration did not take place, were equally subject to, and the inhabitants equally suffered by, the devastations of the same disease ; and the fever of Roseau, as well as every where else, broke out among the shipping in the first instance, by no means incommoded by the emigrants. Dr. Johnston, an eminent practitioner, corresponded with his partner, Dr. Fillan, in the general account of the fever of 1793. The first appearance of the disease was in a ship called the Providence, of London. She arrived about the 8th or 9th of June, and the first case of the fever appeared on board about the 13th. Many of the crew were attacked immediately after, and died. The fever appeared in the neighbouring ships, and spread so rapidly, that about the 20th, scarce any were free from it. He ingeniously confessed that neither himself, nor Drs. Clark, or Fillan, to whom he was then assistant, made minute enquiry so as to establish the source of the disease in any instance, for which he expressed great regret, but attributed this neglect to their being totally unaware of the dreadful consequences which took place, till an enquiry of this nature necessarily became too intricate and uncertain. He further acknowledged, that had

an investigation been instituted with the care and attention the subject merited, he had reason to think that contagion might have been detected as the cause of the disease in every instance. Dr. Johnston gave some instances which placed this matter in a clearer point of view. One of the most remarkable was the case of a Dr. Wilson. This gentleman resided about twelve miles from town. Three days after returning to the country from town, where he had visited persons labouring under the prevailing fever, he was astonished to perceive a number of carbuncles spreading round his neck, and towards his face and breast. The progress of these was so great as to threaten a mortification. In this distress he sent an express for Dr. Johnston, who immediately visited him. By the time he arrived a mortification had actually taken place, and Dr. Wilson died a few hours after, whilst endeavouring to examine the state of his neck in a looking-glass. The description of the sores on this patient's neck, left no room to doubt they were pestilential carbuncles. An immense number of the inhabitants were seized, and many died; but in conformity with the observation made at Grenada, it appears that the disease was more or less fatal, in proportion to the length of residence, and

the degree of assimilation of constitution, of the patient, to the climate. Few negroes were attacked, few, at least, of those residing in the island, and only two died in this gentleman's practice. But in a Guinea ship, with a cargo of slaves from the coast of Africa, the fever broke out a few days after its arrival in the road, and many of the African negroes suffered by it. Many of these circumstances were confirmed by respectable gentlemen of the island not professional; but from the uniformity of their opinion respecting the importation of infection, and the subsequent propagation of the fever by contagion, it does not appear that any reasonable doubt can be entertained of the foreign origin and infectious nature of it. Facts, which prejudice might have given a false colouring to when observed by professional men, appeared to them as they really were; and their conclusions were the result of common sense, abstracted from the too frequently fallacious ratiocination of science.

Dr. James Clark, a physician of great eminence, whose practice for five and twenty years in the West Indies, furnished a most ample field for observation and experience, has published his opinion respecting the origin of the fever of 1793 at Dominica. But what he conceived to be the
most

most certain guide to truth, has in fact proved a source of error, abstracting himself from the information of all contemporary observers. A moment's reflection would have pointed out the incongruity, the inhumanity of such a procedure; if, as seems to be implied by himself, and as has been candidly acknowledged by the gentlemen who were associated with him in practice, the disease was new, and had not been known during their long residence in the island. Impressed with the generally received opinion, he implicitly believed that the origin of the disease must have been endemic, and therefore employed no means to trace it to infection. Uninformed respecting the state of the weather in the other islands, he took it for granted that no thunder, rain, or storms, had been observed in them in the period of the year 1793, at which the fever appeared, although the contrary has been proved in many instances, particularly at Grenada. Involving himself in conjecture, he attributes the disease either to marsh miasma (p. 53) or assigns it to "the strong light and intense heat of the sun," forming morbid combinations with the vital part of the atmosphere, elevating it, and leaving the devoted inhabitants to breathe nought but its "mephitic or heavier part" (p. 61). Although

Dr. Clark's knowledge of mankind has long since, doubtless, confirmed the truth of the proverb "*obsequim amicos, veritas odium parit*," yet would I reluctantly hazard the latter, by offering my sentiments on the doctrine laid down by him, did I not consider that all enlightened minds are open to the impressions of truth, and that in scientific pursuits, it is not the man, but the opinion which is the subject of disquisition. Controversy is far from being my object, nor shall I enter into it with any man. Let it, therefore, once for all, be understood, that as these latter sheets are intended to display an elucidation of what is contained in the preceding ones, so nothing personal, nothing which can lead to doubtful argumentation on the one hand, and facts and reasoning clearly arising from them alone, on the other, are meant to be offered.

It has already appeared that the opinion embraced by Dr. Clark is not peculiar to that gentleman. Dr. Robertson, a very able and indefatigable practitioner of Barbadoes, attributed the fever of 1793 on that island, to similar causes, viz. "to some unknown state of the atmosphere at the time," or "the intensity of the solar rays, and an atmosphere superabounding with caloric," founding this opinion on the belief that

" the

“ the only characteristic difference between the temperate and tropical parts of the world depends solely upon the heat and its effects.” (MSS. p. 8—10). It has also appeared that although the most indisputable facts proved the existence of contagion in the practice of Dr. Ellcock, Dr. Straghan, and others of that island ; and although the universal belief of the inhabitants, founded on unbiaſſed obſervation, went to the eſtabliſhment of the opinion of the diſeaſe having derived its origin from imported infection, yet Dr. Robertſon has denied both, without reflecting that peſtilential infection is not always propagated to the healthy from the diſeaſed. (See Ruſſel on the Plague). I ſhould be happy to have the principles on which theſe gentlemen found their theory, more dilated. Until ſolid reaſons are offered for an opinion, I cannot perceive the admiſſibility of at preſent, I ſhall ſatisfy myſelf with the following general obſervations: It will probably be admitted—That the atmosphere is compoſed of oxygene and azote, but not in a ſtate of chemical combination, only in a mere diſtribution of the particles of each among thoſe of the other: That if ſome combination of the intense heat of the ſun with the vital part of the atmosphere, or even with a cer-

tain portion of it, could be effected, the lives of all animals residing in an atmosphere so circumstanced, must cease ; because the proportion and peculiar distribution of the atmospheric fluids necessary to support animal life, would be thus destroyed : That the destructive power of azote as an atmospheric fluid has not been ascertained, but in certain chemical combinations of that fluid with oxygene : That it is only during the combustion of bodies, and by the respiration of animals, an actual decomposition of atmospheric air takes place, which is, in these operations, effected by the absorption of oxygene : That no solar heat we are acquainted with, unless concentrated by a lens, can produce combustion, consequently no decomposition can be effected by it, when in its natural state of diffusion : That admitting the consumption of the vital air of the atmosphere by intense solar heat, in its usual diffused state, we are aware of the wise and merciful provision made to compensate this loss ; we know that vital air is most amply exhaled from every plant and every tree, “ from the oak of the forest to the grass of the field ;” and that the pernicious fluid which might preponderate in the atmosphere, under a different arrangement, is inhaled by them, or absorbed by the waters of the ocean ;

ocean ; or neutralized by calcareous soils and strata :* That the effects of heat, abstractedly considered, are not destructive, has been incontestibly proved, by the experiments of M. Tillet and M. Murantin, in France, and of Drs. Dobson, Fordyce, and Blagden, in England, in which the degrees of heat applied to the human body, varied from 120° to 220° in the latter, and were increased to 325° in the former :† That in countries where great solar heat is said to be destructive to animal life, it has been invariably found that the action of the heat on marshes and stagnant water, or on extensive desert tracts of sand, is the cause of the mischief perceived, and not the heat alone applied to the body : That as the principle disengaged during the putrid fermentation of animal and vegetable substances, is the true cause of the whole train of idiopathic fevers ;

* See outlines of Medical Geography, by Dr. Mitchell, of New York. Med. Rep. vol. ii. p. 44. “ What a grand reflection, that an inconsiderable quantity of powdered lime strewed over the land, should thus coerce the matter of pestilence, and controul the operations of the atmosphere.” p. 45. The Medical Geography of the West India Islands furnishes many instances calculated to confirm the general position of Dr. Mitchell, that argillaceous countries are unhealthy, and calcareous ones healthy ; and indeed the survey I am now engaged in establishes it beyond a doubt.

† Encycloped. Britannica. Art. Heat.

so does it merit our attention, on the present occasion, to consider whether heat alone is capable of exciting such putrid fermentation; and here the uniform result of correct observation is, that heat alone does not give rise to the putrefactive process, but must be combined with moisture: That as a further confirmation of this, it is well known that Barbadoes, Antigua, St. Croix, and other islands similarly circumstanced, whilst hot and dry, have been, for years successively, remarkably healthy; but the accession of rain, particularly in those whose composition is argillaceous, has instantly produced a morbid constitution: That experience has not proved the deleterious nature of solar heat varying from 86° to 92° , the highest degree noticed by Dr. Clark at Dominica; for in such heat myself and many others have made use of even violent and long continued exercise on foot, without sustaining any injury from it; if injury could have been the consequence, it must proceed from sudden abstraction *from* heat, and permitting clothes made wet by perspiration to remain too long attached to the surface of the body, after much action had ceased; accordingly, a gradual abstraction from heat, and a change of linen, prevented any mischief; and in cases such as this, flannel next the
skin

skin displays its principal advantages : That it is the result of attentive, accurate, and very general observation, that great solar heat, so far from exciting a morbid state of the atmosphere, corrects or destroys pestilential infection : That in certain countries great artificial heat, alternated with intense cold, has been successfully employed with a curative intention in malignant fevers : That to say solar heat is the cause of fevers of a remittent or intermittent form, is not correct, for universal observation has manifested only an aptitude in it to concentrate the pernicious principle disengaged from, whilst it increases the volume of marsh miasmata, which have been ascertained to be the true and only cause of such fevers : That although in the first part of this work I have said that heat is a cause of the yellow remittent fever, it is not to be understood that mere uncombined heat is meant ; for the observation is there applied as it is here, heat being a principal agent in the production of, not itself the essential cause, of fevers of a periodical type : That, in fine, the only disease I am acquainted with which may be considered as the direct effect of intense heat, is that species of phrenitis, known within the tropics by the name of “ coup de soleil,” and more generally

generally by that of insolatio;* but the circumstances attending the production of this disease are in many respects different from the usual conditions in which solar heat is applied to the human body; the subject of it must be exposed to the direct rays of the sun during the hottest time of the day, the heat of which varies from 120° to 130° within the tropics; he must be stationary; his head must in general be uncovered; and the atmosphere must be unagitated. This much I have judged it necessary to say in justification of myself; and with a view of preventing others, who may not have attentively considered the subject, from being led away by erroneous opinions. And in having thus freely stated my sentiments, I trust, both the gentlemen whose opinion they seem to militate against, will consider my motives as disinterested, and constituted in a desire to attain truth.

Dr. Fillan informed me that the treatment of the fever was purely mercurial, and that when salivation was excited, the sick, without exception, recovered. To effect this, doses of ten

* How far the species of fever called calenture may be considered as a modified insolatio I cannot determine, having never seen it; but the circumstances in which it occurs, render it probable.

grains of calomel were given and continued till the action of the medicine on the system became evident by ptyalism. Following the example of the French emigrant practitioners, bleeding was at first resorted to; but the pernicious consequences of employing this remedy very early induced Dr. Fillan to lay it aside altogether; and he attributed the great mortality which happened among the French, and among the French emigrants more especially, to the use of bleeding. The proportion of mortality under the mercurial treatment was as 1 to about 5; that under every other mode of treatment was as 1 to about 2. Dr. Johnston corresponded in his account of the result of the curative treatments; but made the proportion of mortality under the mercurial one as 1 to 7.

CHAPTER X.

Antigua.

THE general aspect of Antigua seen from sea, has little inviting in it. Environed almost on all sides by shoals and rocks, the bare, broken and cliffy outlines it exhibits, promise but a meagre compensation for the danger encountered, in approaching the island. The prospect, however, considerably improves when objects are distinguished; and having landed, a pleasing change of scene obliterates former apprehension, and raises a wish to prolong the enjoyment of a country, and of a society as delectable as they are new in the progress of the traveller hitherto. St. John's is pleasantly situated on a very gently declining plain at the bottom of a deep but not secure harbour. The ground on the north becomes a perfect flat, and formerly had been marshy, an inconvenience which has long been removed by cultivation, and by filling up the swamps with earth. But formerly, St. John's Island, now connected with the main land of

Antigua,

Antigua, by a narrow isthmus thus formed, was once uninhabitable from the noxious vapours which enveloped it; and an extensive barrack, still in good repair, has been long abandoned, although now rendered sufficiently healthy. The streets of St. John are regularly arranged; the houses in general are spacious and well ventilated; and few instances occur of those cabins crowded on each other, the asylum of filth and low dissipation, which disgrace most of the British West India towns.

With a view to examine the structure and disposition of the country of Antigua, it is necessary to traverse it in a diagonal line from St. John's to Falmouth and English Harbour. In this journey the following remarks may be made. For four miles the road runs chiefly in a wide valley, stretching into a plain, formed by two unequal and discontinuous ridges of hills. Those on the right are, in some instances, of considerable magnitude, and display a wild, rough, confused and heterogeneous surface and aspect. These, and hills diverging from them to the coast of the island on that side, and the promontories and islets there placed, are the only elevations possessing the figure so prevalent in most of the other islands, the cone; all others are rounded

ed or elliptical, or very generally distinguished by
 cliffs and singular excrescences. Having crossed
 this plain, the country becomes more divided;
 and begins to offer to observation an appearance,
 I believe, peculiar to Antigua. The rock is uni-
 versally schistous and shivery, and almost every
 where appears on the surface, that being thinly
 coated in a few places with argillaceous earth.
 But the colour of this rock, as well as the soil
 with which it is so sparingly covered or inter-
 mixed, is a beautiful pea-green or æruginous.
 This structure and colour continues without in-
 terruption for about five miles; and vary only
 in having in some places deeper shades of green.
 At Monk's-hill the colour is at length lost; there
 a huge and elevated mass of stratified schistus,
 intermixed with large blocks, or resting on deep
 seated beds of quartz, suddenly terminates this
 singular appearance. Monk's-hill itself, how-
 ever, being deeply tinged with the coppery im-
 pregnation, having a perpendicular elevation of
 600 feet, and being very generally covered with
 grotesque sparry encrustations, exhibits a very
 extraordinary and a very grand appearance. On
 enquiry it is found, that the æruginous rock and
 soil are not confined to the tract passed over;
 they extend across the island in a line nearly
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north and south, and in a continuous breadth of five miles ; they then pass under the sea, forming a reef or bank of equal breadth ; and re-appear on the opposite shore of Montserrat, which island they traverse, as they have already that of Antigua. The sea under which they pass abounds in fish, but those caught, if made use of as food, impart a deadly poison to those who imprudently or ignorantly eat them. Does this give stability to the received opinion of the cause of the poisonous nature of fish in certain situations in the West Indies ? The houses in this tract are built of the green rock, and are prettily diversified by the contrast which the lists or lines of a red mortar, separating the squares of stone, produce. The rock and soil, after passing Monk's-hill and Falmouth, situated at the foot of it, change abruptly ; the first becoming a greyish aluminous schistus, with black martial septa, and covered in many places with sparry excrescences ; and the second a reddish clay. In the country, already traversed, the traveller is astonished to perceive extensive tracts of pasture or unoccupied surface ; a circumstance he finds unaccountable in an island so productive in seasonable years. Nor is it easy to reconcile an uncultivated surface equal to nearly one-half of the superficial contents

contents of Antigua, with a population amounting to near 50,000 : and the problem becomes more intricate, when it is considered that no country presents a more lively picture of the uncertainty of West India soil, when deprived of its native woods, which communicate fertility by attracting moisture. In the neighbourhood of Falmouth the country rises much, but nowhere exceeds an elevation of 1300 feet : and from thence to English Harbour and the Ridge, is very picturesquely diversified by breaks and knolls crowned with woods ; with rocky or wooded hills ; huge masses of rock projecting into the beautiful bay of Falmouth ; a romantic islet and ruin ; and the distant prospect of the shipping in English Harbour, with the various and grotesque buildings, constituting the dock-yard. In the inlets of the sea in this part of Antigua, considerable tracts of muddy surface, partly covered with mangroves, are exposed during the ebb tides to the action of the sun ; and being confined by the surrounding heights, an almost unsupportable degree of heat is often produced. The exhalations from these are supposed to render the dock-yard occasionally very unhealthy ; and, although the situation of these muddy tracts is to leeward of the harbour, the frequency

frequency of remittents and dysenteries among the crews of the ships of war refitting or lying up during the hurricane months, removes all doubt that these maladies proceed from marsh miasmata. The view from the old and ruinous, but extensive fortrefs of Monk's-hill, gives a sufficient idea of the greatest and richest portion of the island, the north-east side. This extensive and beautiful tract is highly cultivated, and impresses the idea of innumerable gardens, judiciously disposed and elegantly decorated. The summit of Monk's-hill is, beyond doubt, one of the healthiest situations in the West-Indies; and, together with the various heights called the Ridge, about three miles further on, constitutes a strong and most salubrious post for the defence and protection of the naval arsenal at English-Harbour. A satisfactory proof of this was furnished by Mr. Mytleberry, surgeon to the 59th regiment, who testified to the superior health of that corps, and stated the proportion of mortality which had taken place in their hospital, as about 1 to 40.

I have observed, that the rock of Antigua is generally schistus, in some places shivery, in others laminous, with pyritous or martial septa, and with the strata variously inclined. Where

this is not covered with soil, it is encrusted generally with a curious sparry matter, which, towards Monk's-hill, effervesces with the nitrous acid; but at St. John's, where the masses are largest, and where it seems to assume the character of fluor spar, the acid has no action on it. Some of the masses, particularly those near the church of St. John's, are very large, and spread over the argillaceous subincumbent rock to a considerable depth and extent, and in the manner lava does. It possesses, however, not one other feature of the volcanic character. Indeed, there is no where any vestige of volcanic action on Antigua, the whole having evidently derived its origin from water. It is singular, that Antigua alone, of all the Caribbee islands, exhibits this sparry encrustation. Were it not that the basis of the island is argillaceous, and that the substance in question resists the action of the nitrous acid, every where except in a very limited district, I should be inclined to consider it rather as petro-siliceous, than of the nature of fluor. Besides these, there are found considerable blocks of white opaque quartz; this is more abundant in the tract impregnated with copper, and being the matrix of that metal, confirms the opinion that copper exists here, at least, in an oxydated state.

state. Antigua is remarkable for its petrifications; these are generally white, and from their effervescing with the nitrous acid, may be considered as calcarious. In the vicinity of the Ridge, in a wild sterile spot, overgrown with false acacia, repent cactus, and dwarfy psidium, intermixed with innumerable huge masses of spar, there is a curious cavern, in which an immense quantity of beautiful petrifications are found, besides stalactites; and in many other parts of the island, they are met with detached, in forms infinitely varied.

Antigua labours under two great disadvantages, an almost total want of springs, and an uncommonly dry atmosphere, notwithstanding a singular irregularity in its temperature. The inhabitants from these causes are, not unfrequently, destitute of water, which they are then obliged to import, from the neighbouring islands, at a great expence. But the supply thus procured must be generally very unequal to the necessities of the inhabitants; and one description must suffer dreadfully in a very dry season. The effects, indeed, of a deprivation of water have been frequently and fatally experienced; but the year 1779 was particularly severe. The ponds in which the cattle or stock of the plantations are

watered, became dry, the importation was altogether insufficient, and every part of the surface being parched up, the stock and slaves perished in the utmost agony ; and a most fatal and malignant fever every where prevailing, threatened total ruin. When these destructive dry tracts of weather are suddenly succeeded by a profusion of rain, which generally happens once in three or five years, a very fatal epidemic remittent is the consequence. However unsalubrious such changes from aridity to moisture are, the planters consider themselves as compensated by the immense fertility the soil acquires from the latter. The difference in the general produce of the island, occasioned by this diversity, is as 1 to 7 ; and such is the wonderful capability of the earth in many places, that if rain falls plentifully even in what is called the crop season of the year, although the remainder may have been uniformly dry, still an increase of three-fold has been observed to be the consequence.

The temperature of the atmosphere of Antigua appears to be extremely irregular. A medical gentleman of distinguished respectability and professional knowledge, Dr. Byam, informed me, that in the town of St. John, the highest part of which is not elevated above the surface
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of the sea more than seventy feet, the thermometer has demonstrated this. In the morning, it has frequently happened, in dry weather, that the mercury has been stationary at 62° and 65° , five degrees lower than I have observed it on the accessible parts of the heights of Vauclan of Grenada, or at the rim of the crater of the Soufriere of St. Vincent. This seems to be altogether unaccountable. No swamps are in the neighbourhood, and consequently no adventitious moisture; the town stands on a bed of schistous rock, and where this is not encrusted with spar, the superincumbent soil is argillaceous earth. The numerous ponds of rain water around St. John are the only assignable cause, unless we admit the coadjuvancy of the soil. The thermometer in general ranges from 75° to 90° in the course of the year; and, consequently as 86° is most generally the stationary point at noon, gives a medium of 84° . But rain continued for a few hours produces a chill, and a sensation of wintry cold seldom experienced in these islands. In consequence of these peculiarities in the temperature of the atmosphere, the inhabitants, in even the most arid years, are not dispossessed of a variety of vegetables and fruits. Nor does it appear a necessary condition, that these should be planted

on the higher situations, nor in low narrow valleys, where a chance of retained moisture might contribute to their growth. The inhabitants can assign no cause for this ; but it is a singular fact, and may be considered as a distinguishing feature of Antigua. It is also a remarkable instance of the care taken by nature to compensate for the want of that moisture the other islands, a few excepted, enjoy. The cause of the fertility of the north side, is the nature of the soil, a black mould on a bed of marl.

The dryness of the atmosphere may be considered as a principal cause of the prevalence of the *glandular disease* ; for, although it may have been observed, that the disease appears during a rainy season, yet as moisture is by no means a quality of the air in general, so may we conclude, that that disposition of it which favours the production of this affection of the lymphatic system, is not even suspended by these occasional rains in Antigua. The disease has gained a most alarming ascendancy ; and the consequences of the obstruction and deposition of lymph, have been such as to excite very serious apprehensions. Dr. Byam stated these to be, violent head-ach and vertigo ; palpitations, oppression at the præcordia, &c. The disease, he says, has appeared

in every part of the body ; a change of climate removes it, but does not secure against its recurrence on returning to Antigua. The symptomatic fever has been extremely severe, particularly the cold-fit. His experience has produced nothing very interesting in the treatment. Mercurials succeeded by bark are the remedies most depended on. He considers the disease as certainly proceeding from aridity of atmosphere, and justly thinks that Dr. Hendy's book is a valuable approach towards the knowledge of the nature, peculiarities, and treatment of it.

When the unhappy French refugees from St. Christopher's, about the end of the year 1629, under the direction of the famous D'Enambuc, drove from their settlements by the armament of Don Frederic of Toledo, sought an asylum in Antigua, they found it so unhealthy, so marshy, and so incapable of cultivation (*difficile à habiter*) that they with one accord entreated their leader to conduct them to Montserrat, although then in the possession, and inhabited by the Caribes : they were, however carried back to St. Christopher's, the Spaniards having quitted it.* The English, although more persevering, have

* Du Tertre, tom. i p. 34.

not found the circumstances of the island, with respect to health, more favourable; and that Antigua has been often severely afflicted with fevers of a most fatal tendency, the experience of the inhabitants, at different periods, from the first establishment of the colony, manifests: but how far these have depended on other causes, besides the principle of vegetable putrefaction, or some morbid principle peculiar to the soil, evolved by the sudden accession of rain, after a series of dry weather, I am not competent to say. No doubt, however can be entertained, that the occasional causes of the malignity which has often marked the epidemics of this island, may be discovered in the deprivation of water and fresh vegetable food among the inferior class of whites and the negro race; or these in combination with others, may produce perhaps a mixed fever, if such may be considered as consistent with the simplicity of the animal œconomy. Whether the very malignant fever of 1793, in this island, derived its origin from imported infection, or not, I shall leave the reader to judge. To Dr. Byam and Dr. S. Murray, I am chiefly indebted for the information I have obtained. In conversation with the former, on the origin, history, and treatment of this fever, I found the same doubts,

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the same contrariety of opinion, and the same irresolution and instability of practice prevailed at Antigua, as every where else, where that destructive malady appeared. In this island, at St. John's, it first broke out in the shipping, from whence it spread to the town, and from thence it sporadically extended to the country. No disease in any way similar, except the yellow remittent fever of the climate, had been seen on the island by the oldest inhabitant; but it differed from that in so many points, Dr. Byam said, as to have been justly considered as a new disease. All descriptions of persons, and all ages were subject to it; it only varied in the degree of its violence, the symptoms being uniformly similar. But a circumstance was mentioned by Dr. Byam, which appears to me extremely singular, and very different indeed from what happened in the other islands. Children, especially creole children, were uncommonly obnoxious to it, and many became victims to it. The oldest inhabitants were attacked, and several died. As its appearance at Antigua was in the month of June 1793, I took occasion to observe, that the circumstance of its occurring in all the West India islands at periods commencing a month or two after its importation into, and
 general

general prevalence in the port and town of St. George, Grenada, furnished at least a probable argument of its being contagious in every instance, and proceeding originally from imported infection. Dr. Byam ingenuously acknowledged it did, especially when strengthened with the argument arising from its appearing in every island among the shipping in the first instance. The difficulty experienced, or said to be experienced in tracing the contagion to its source, did not, he further acknowledged, tend to contravene the argument; because, if the habit of indolence, almost peculiar to medical practitioners in the West India climate, which precludes the trouble of close research and minute investigation, was surmounted; and, consequently, if more care and industry were employed, the sources of contagion might have been traced. As this gentleman's description in general corresponded with what I had myself observed at Grenada, I perceived little room to doubt that the fever of Antigua of 1793, was really and in truth the malignant pestilential of the former, or the Boulam fever. This opinion was confirmed by the information I received at Falmouth. In the treatment of the fever, Dr. Byam confessed himself totally undecided as to the means which may
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with most certainty prove curative. What he chiefly depended on, when he saw his patient early in the disease, were bleeding and plentiful alvine evacuation. Bark was of no efficacy ; on the contrary, it was extremely injurious. The mercurial treatment he recurred to only when the epidemic was on the decline, consequently he had little experience in it. In the advanced state he gave up all hope of being useful. The proportion of mortality in his practice, he said, including the recent and the advanced cases, was as about 1 to 2.

Dr. Stephen Murray, a practitioner of considerable eminence at Falmouth, in the vicinity of English Harbour, and at that time surgeon to the Ordnance on the island, informed me that the malignant pestilential fever was evidently imported in the year 1793, by the Experiment man of war, the crew of which received the infection at Grenada. She came into English Harbour in the greatest distress, having lost almost all her men by it. An artificer belonging to the Ordnance who had gone on board, and staid all night, lay in a blanket belonging to one of the victims on board. He was instantly seized with the disease, and died in a few hours after accession. The infection, by means of this blanket,

blanket, which was carried on shore to the Ordnance quarters, as the property of the deceased, and of his wearing apparel, which was also secured in the same manner, was communicated to the whole detachment of artillery, and from them to the 21st regiment. A boat's crew of the Solebay frigate, which was sent on board the Experiment to assist her people in working her into the harbour, received the infection, and all of them died. The disease was by them carried on board the Solebay, and upwards of 200 perished by it. This information, compared with that given by Dr. Byam, relative to its first appearance in the shipping, and to the doubts and contradictory opinions which prevailed among the practitioners in St. John's, leaves little doubt respecting the infectious nature, and the manner in which the disease was imported into St. John's, the intercourse by water between that place and English Harbour being very frequent.

CHAPTER XI.

Saint Christopher's.

THE atmosphere of this beautiful island has been, from its first settlement as an European colony, in 1625, as much famed for its salubrity, as the manners of its inhabitants have been for their urbanity; and the distinguishing appellation “*île douce*” (Du Tertre, tom. ii. p. 6), is as applicable to both now as it was in 1640. Having been the mother colony of the West India settlements, a character was impressed on it, by the French and English gentlemen who conducted the original adventurers, which it still retains. About the middle of the last century, the manners of the different French colonies, gave rise to a proverbial distinction highly honourable to the inhabitants of St. Christopher's. It was remarked that “*la noblesse étoit à Saint Christophe, les bourgeois à la Guadaloupe, les soldats à la Martinique, et les payfans à la Grenade.*” (Hist. Gen. des Voyages, tom. lix. p. 229). The general aspect of the island is extremely beautiful.

beautiful. Mount Misery, occupying the body of the island in the north-west, gradually declines into smaller hills, and is at length lost in the plain of Basseterre in the south. Between the foot of this mountain and the sea, a narrow gently inclining plain, every where environs it, whose fertility is only equalled by its delightful distribution, and its uncommon salubrity. Mount Misery, 3711 feet in perpendicular height, is a volcanic mountain finely variegated by wood, pasture, and huge granite cliffs, one of which grotesquely disposed on the summit, and forming one side of the most perfect crater I have met with in the West India islands, gave rise, M. Rochefort says, to the name St. Christopher's. (Hist. Nat. & Morale des Iles Ant. p. 30). The southern extremity of the island is a peninsula of barren ridges, connected with the main land by a low isthmus, and exhibiting a rude uncultivated mass; enhances the beauty of the latter. St. Christopher's every where presents the most pleasing scenery; but the lee side, by a bolder disposition of mountain, gully, rock, wood, and cultivated surface, possesses more picturesque beauty. Were I to select where the scenes are generally so interesting, I would point out the magnificent mountainous landscape at Old Road; and

and the less elevated but more varied beauties of Sandy Point. Indeed the whole of the country between Old Road and the western extremity, by possessing the singular insulated heterogeneous truncated mass called Brimstone Hill, situated at the base of Mount Misery, where it exhibits its most romantic aspect, is almost unique. St. Christopher's, where its surface admits cultivation, is a perfect garden; and we cannot be astonished at its being so, when we consider that at all times the population has been very considerable. In the year 1658 the French division alone, comprehending the south-east and north-west extremities, and consequently the two principal towns, Basseterre and Sandy Point, could send forth 10,000 fighting men (Hist. Nat. and Mor.): and, although, when it fell into the exclusive possession of the English, in 1713, the number of its inhabitants was very considerably diminished, yet an enterprising spirit, encouraged by the facility with which cultivation could be carried on, and the astonishing fertility of the soil, amply compensated, and not a practicable spot was left neglected. Population is at present rather on the decline, not from any change in the soil or climate, but from the fluctuating nature of commerce, the annihilation of the adjacent neutral

neutral port of St. Eustatius, and the number of absentees.

Every circumstance contributes to the maintenance of health in St. Christopher's; a soil composed of sand and vegetable mould instantly absorbs moisture; the surface, either precipitous, or gently declivous, permits not the accumulation and stagnation of water; the consequent absence of swamps; and a singular purity of atmosphere. The only exception is perceived to the south-east of Basseterre, where a considerable tract of marsh has most unpardonably been left undrained; and annually, during the hot months, produces dangerous fevers of the remittent and intermittent kind. One unpleasant deficiency, however, is perceived: the only streams deserving the name of rivulet are found at Old Road, and the district of Cayon. Springs rising in some parts of Mount Misery, and the ridges which branch from it towards Basseterre, are conducted to the adjoining plantations by pipes; but as the water has a strong saline impregnation, its use is attended with no small inconvenience to those not always in the habit of drinking it. A long tract of dry weather is consequently a source of infinite distress, as has been unhappily experienced during the two or three last years.

Basseterre

Basseterre and Brimstone Hill are the posts occupied by the troops garrisoning St. Christopher's. Were the source of miasma removed from the neighbourhood of the former, a healthy constitution of its atmosphere would be the necessary consequence, for the town stands on sand, and is sufficiently perflated by the trade wind which blows over the lower branches of Mount Misery situated behind it. The history of Vesuvius and Etna, as given by their modern celebrated explorers Sir W. Hamilton, M. Ferber, Mr. Brydone, Spalanzanni, &c. may justly give cause of apprehension to the inhabitants of the environs of Mount Misery, as well as to those of the other volcanic islands: for as a period of several hundred years elapsed from the earliest tradition of an eruption of the former, till the famed one which deprived the elder Pliny of his life; and from this to the second on record: and as long intervals occurred between the eruptions of the latter, although from the vestiges of those which happened beyond the record of history, had induced the natural historian of Etna to calculate the existence of the world from a wonderful antiquity. (Brydone, let. vii.) May not the seemingly extinguished volcanoes of the western archipelago, when least feared, suddenly burst

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their present bounds, and cover their vicinity with horror and destruction. Montserrat, I am told, exhibited an alarming specimen about the beginning of this century, of what may be expected; Guadeloupe has very recently been distinguished by the activity of its apparently extinguished volcano (*Rapport fait aux Citoyens Victor Hugues et Lebas sur la situation du volcan du Guadeloupe, 1798*); and the incessant earthquakes which terrified and endangered the lives of the inhabitants of St. Christopher's, during the whole of the year 1797, give solidity to apprehension. Heaven avert the evil! The form and structure of Brimstone Hill sanction the opinion however. In a curious map of this island prefixed to Du Tertre's *Histoire Generale*, and published in 1642, this hill is distinguished by the name of "Mine de Souffre." It is nearly a truncated cone, terminating in two peaks, composed of the most singular congeries of different bodies, we can well imagine. Volcanic ashes, consolidated by time into an immense calcareous mass, form the basis of this hill; but there are innumerable strata of shells, of gravel, of pyrites, of lava, of pumice stone, interposed, and together with immense blocks of blue granite, and of argillaceous rock, evidently prove its volcanic nature and origin:

gin: and were more proofs wanting, the vicinity of the perfect crater of Mount Misery, but more especially the exudation of sulphur from the hill itself, as well as the sulphureous spiracula in those places where deep excavations have been made for the foundations of buildings, together with the excessive heat of those spots where spiracles have been discovered, would be decisive. Its position, with respect to the adjacent heights, has secured to it a preference as a post of defence; and it constitutes the principal fortress of the island. It is dry and hot, notwithstanding the perspiration of the trade wind; but it is also remarkably healthy, for the 9th regiment, stationed on it from the year 1786 till the year 1794, lost no more than three men before the malignant pestilential fever appeared among them in July, 1793.

In an island so remarkable for the purity of its atmosphere, diseases of importance proceeding from endemic causes, are not to be looked for. The yellow remittent fever seldom appears any where but in Basseterre, during July, August, and September; and then its violence is comparatively trifling. Simple remittents sometimes appear during the same months; but intermittents, and diseases depending on topical inflammation,

mation, such as hepatitis, are never met with. The year 1793, however, demonstrated that an island famed for the uniform healthy constitution of its atmosphere, may be ravaged even in the torrid zone, by a fever arising from an imported virulent infection. My information I have principally derived from two very respectable and ingenious medical gentlemen of the island, Dr. Armstrong, of Basseterre, and Mr. Noble, surgeon to the Ordnance, and an eminent private practitioner in the neighbourhood of Brimstone Hill. The former of these gentlemen says that the infection of this pestilence was first brought to St. Kitt's by a ship from St. Vincent, in the month of June, 1793. The contagion was ascertained beyond a doubt; the symptoms were those I have described; and the event during its prevalence that year was almost uniformly fatal. I have had already occasion to state the circumstances which led to the introduction of a successful mode of treatment in July, 1794, in Dr. Armstrong's practice. The information he has since favoured me with is still more interesting, and leads me to doubt whether his ability, his candour, or his humanity, is most conspicuous, and reflects most honour on him. He has had a great deal of experience in the malignant pestilential

lential fever since that period, and has uniformly adopted the mercurial plan, with such success, that the proportion of mortality in his practice has been no more than as 1 to about 20 ; a wonderful instance of the propriety of the treatment itself, as well as of the judicious manner in which it has been conducted by him. It has been, nevertheless, with the utmost difficulty Dr. Armstrong has removed the absurd prejudice which too generally prevailed against the use of mercury : he found that some practitioners, the least respectable and most ignorant, long professed the utmost abhorrence to the practice, without being able to assign a single good reason for such unwarrantable prejudice ; but that the most eminent and best informed, by conviction of its superior efficacy in a number of instances, became converts to it. Two instances of the latter merit particular notice. Dr. Bridgwater, an old and very eminent physician, wedded, one might imagine, to the rules of practice resulting from long experience, finding every means he had employed in the treatment of the malignant pestilential fever totally unsuccessful, and hearing of the astonishing efficacy of those resorted to by Dr. Armstrong, comparatively a young practitioner, waited on him, and with a noble candour and ingenuouf-

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ness, stated his difficulties, and requested to be informed how he should proceed so as to save his patients. Dr. Armstrong had the satisfaction to remove all his scruples, and to learn from him soon after, that he had not lost a patient since he had recourse to the mercurial treatment. Dr. Stevens, unfortunately lost in the awful storm which happened at the first essay made by Admiral Christian's fleet to reach the West Indies, in November, 1795, and the partner of my ingenious informant, was long influenced by prejudice against the mercurial treatment. His want of success, compared with the happy issue of his partner's practice, at length alarmed him; a fair trial of this and the tonic treatment was determined on; and two patients in precisely the same circumstances in other respects, were treated by each in their respective methods. Stevens's died, Armstrong's recovered. He then resolved on having recourse to mercury; and his success not only astonished him, but completely removed every scruple he entertained. Dr. Armstrong's continual success, contrasted with the mortality which occurred in the practice of many other medical gentlemen, gave rise to the flattering remark of a gentleman of the island, that the yellow fever in his hands was not more dangerous than

than a gonorrhæa under the most approved modern treatment. In the year 1796, Dr. Armstrong had an opportunity of displaying more extensively the singular efficacy of the mercurial treatment of the malignant pestilential fever. After the campaign of that year, a detachment of 200 of the York Rangers was sent to form part of the garrison of St. Kitt's; and at the same time several draughted regiments arrived on their way to England. The former, and some of the latter, particularly the 54th regiment, received the infection on board the transports they were carried down in. The disease exhibiting its usual malignity and devastation, the legislature took into their consideration the measures to be pursued to check its progress; and as a principal step towards this, a committee was appointed to wait on Dr. Armstrong to solicit him to take charge of the sick, his success pointing him out as the most proper person in so dangerous a crisis. He accepted the charge; and his success, under circumstances extremely unfavourable, most clearly demonstrates the superiority of the mercurial treatment. He prevailed on some practitioners to assist him in the attendance on the sick soldiers; and of those placed under the care of these gentlemen he did not speak. But of

sixteen who were more immediately under his own eye and direction, only two died ; a proportion which, if we consider that the sick were ill a considerable time before medical assistance could be given to them, and that they laboured under every possible disadvantage of diet and accommodation, must be reckoned a very trifling one indeed. His success was still greater with the remains of the 54th regiment. Lieutenant Colonel Derby, on leaving St. Kitt's, most warmly expressed his sense of obligation to the Doctor, assuring him that in three weeks he had saved more lives than had been saved during all the former residence of the regiment in the West Indies. Mr. Perry, the surgeon, a very ingenious young gentleman, but, like most of the medical practitioners of the army, unhappily under the fatal influence of prejudice, long resisted the adoption of the mercurial plan ; but at length authority secured his acquiescence ; and having himself been rescued from the grave by Dr. Armstrong, he candidly acknowledged that he had been hitherto totally in the dark from a bias to mistaken principles, the cause of many deaths. Such an acknowledgment, when it proceeds from conviction, is noble, and reflects honour on the person who makes it.

Dr.

Dr. Armstrong, from the consideration of the rapid decline of the *vis vitæ*, when the action of the mercury is slow on the system, has been induced to introduce a few modifications into his practice. The bark he found totally useless exhibited with this view, nor did wine, although a better medicine, produce a more desirable effect. As the two great tonics proved thus ineffectual, it became a matter of uncommon difficulty, to select from the tribe of equivocal tonics, such as might fulfil the great intention of giving strength and tone to the system, whilst a medicine of a totally opposite nature, was thrown in to obviate pestilential inflammation. The choice made on the present occasion certainly points out no common degree of fortitude and ingenuity. This was the cold bath. After giving ten grains of calomel partly as a deobstruent, and partly as an antiphlogistic, he continues the use of the medicine in rather smaller doses, every three hours, with the sole view of resolving the inflammation peculiar to the disease, till it excites ptyalism. Should any doubt, however, arise of its producing this at a sufficiently early period, he has immediate recourse to the cold bath. This is repeatedly administered in the course of the day, by dashing over the naked body of the patient a large

large pailful of cold water, and wiping him dry as soon after as possible. The efficacy of this practice in exciting the action of the mercury is wonderfully great; nor has it, the Doctor assures me, in one instance failed. Upon the whole, Dr. Armstrong has ingenuously said that he has often blessed the happy moment at which I communicated to him a practice which has been productive of so much good in his hands.

Mr. Noble made his medical report of the state of the hospital under his charge to me, on the 12th of December, 1797. In this the similarity of circumstances of the fever of 1793, related by him, to those of the same fever at Grenada, is very remarkable, and obviates all doubt of their having depended on the same cause, imported infection. The symptoms; the manner in which the disease originated both at Basseterre and Brimstone Hill; the suddenness of its appearance at the latter, where no important interruption of health had been ever before observed; the contagious atmosphere surrounding the sick, and extending to a limited distance; the gradual progress of the disease from the center of infection to most parts of the island, the inhabitants of which were connected or communicated with those of that place; and the curative treatment found
most

most beneficial; all confirm this opinion. On the manner in which the disease originated, Mr. Noble thus speaks: " It was for a long time a matter of much doubt with some of the medical men of this island whether the fever which appeared in 1793 was generated on the island, or imported by contagion or infection. For my own part, however, I never entertained the smallest doubt upon the subject, and am well convinced in my own mind, that it was imported directly from Grenada in some of the ships of the fleet which rendezvoused in the road of Basseterre, in the month of June of that year, in their way to England; for it made its appearance in the town of Basseterre either during the time the fleet remained in the road, or immediately after its departure. Basseterre was at that time crowded with French emigrants; and among them the disease made its first appearance, and proved extremely fatal. It was not, however, by any means confined to them, but soon spread very generally over the town, and by degrees was communicated to every part of the island. Next to the French emigrants, the circumstances of whose unfortunate situation, rendered them very obnoxious to it, the description of people who suffered most was the sailors belonging to the merchantmen.

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The immediate communication of contagion or infection to the garrison on Brimstone Hill could not be traced ; but from the frequent intercourse which took place between the foldiers and the inhabitants, there was every reason to believe that the disease was conveyed into the garrison by that means. It made its first appearance there about the middle of July among the foldiers of the 9th regiment, who, till that period, had been singularly healthy ever since their arrival in the island, which was, I think, in 1786 ; notwithstanding which, a number of the men, and five or six of the officers died. None of the men of the royal artillery were infected till the 1st of August. From the 1st of August, till the latter end of September, when the disease entirely disappeared, twenty-three of the royal artillery, and corps of artificers were admitted into the hospital with the fever, of which number seven died." Dr. Noble's plan of cure in 1793, had nothing new in it ; it was formed on the intentions of evacuating morbid humours, lessening the volume of the circulating fluid, and preventing putrescence by the employment of antiseptics and tonics. In the pursuance of these objects, bleeding was resorted to as a remedy indicated by the intense pain in the head, and inflammatory appearance of

of the eyes ; but, he says, “ I cannot, however, say that I ever experienced any good effects from the use of the lancet ; on the contrary, it produced a very great degree of debility ; and even in cases where the patient recovered after its use, I observed that they continued much longer in a state of convalescence, than where it had been omitted.” To check the incessant vomiting, besides the effervescing mixture, æther, blisters, &c. he found most benefit from “ the frequent application of cloths moistened with a solution of ammonia or nitre in the act of solution, to the region of the stomach, and from a medicine composed of two ounces and an half of lime-juice, as much marine salt as will saturate it, two ounces of brandy, four ounces of water, and a sufficient quantity of sugar. Of this the patient took an ounce every two hours or oftener, frequently washing the mouth with it. Bark, far from producing good effects, increased the irritability of stomach, and made it reject medicines which might have otherwise sat on it. “ But, he adds, I found nothing prove a more powerful tonic, or so conducive to recovery, as the frequent use of the cold bath.” This remedy has since that period been employed much more extensively with the best effects, by my worthy and ingenious friends,

friends, Drs. Archibald and Williamfon, of Nevis, and by myself and a few others from their example. We have never found any bad consequences from the exhibition of antimonial and mercurial medicines, during the use of the cold bath, but rather that it proved auxiliary to these remedies. I well know that this practice has been highly condemned by a certain set of medical practitioners, although they have never allowed themselves to try its effects. On the use of calomel he speaks thus : “ Where I thought the purgative had not operated sufficiently, I added one or two grains of calomel to each dose; not, I must confess, at that time with an intention of producing any effect upon the glandular system ; though since that period I have used it with that intention in similar instances, both in hospital and private practice with the best effects. To this practice I was first induced by a conversation which I had with you upon the subject, when I had the pleasure of seeing you on your way to England, in 1794. Since that time I have given calomel in very large and frequently repeated doses, and with the best effects. Indeed no case has come under my observation, where salivation has taken place from the use of calomel, or even where, from the appearance of the
gums

gums and tongue, the effect of it was evident, where the disease did not terminate favourably." He observes that hæmorrhage was a very common occurrence, and to a considerable extent, but never in any instance that he met with, critical. The blood was always in a dissolved state and black; and when hæmorrhage took place, it was in general from the nose, mouth, and anus; and in several instances from wounds and ulcers, which the patient had before infection. Carbuncles were frequent, and always attended a favourable termination of the disease. In one case only did a swelling of the scrotum, and sanguinous discharge from the urethra take place. No instance of relapse, and only one of re-infection. The general proportion of mortality under the mercurial treatment was as 1 is to 10.

The truth of all these statements was testified by several eminent and respectable practitioners of the island, contemporaries of Dr. Armstrong and Dr. Noble, particularly Dr. Hart and Mr. Swanson.

I know of only one exception in St. Christopher's to this result. A medical gentleman at the head of the staff of the garrison, made to me the singular declaration, that the only way to treat the yellow fever was in the *pure antiphlogistic*

gistic method; that with copious bleeding he would engage to cure 100 out of 100 brought to him sufficiently early, that is, I suppose, before the disease is formed; and that it would be better to leave the disease to nature than treat it in any other way. Did this bold assertion correspond with the result of his practice, we should give implicit credit to it: but what are we to think of it, when we are assured by medical gentlemen associated with him in hospital practice, and who knew the general result, that the proportion of mortality in this gentleman's practice in this fever, has been as 1 to 3 or 4. This assertion may recall to us that of Mr. Bryce, who, in a fever of the most threatening and malignant nature, lost no more than three in three hundred cases, including relapses, &c.; and, perhaps, were the truth known, we should find that its foundation was equally baseless. The method described by Mr. Bryce has been employed by many of the most judicious practitioners in the West Indies; but there, alas! the most successful have considered themselves singularly fortunate in losing one in only fifteen or twenty. Supposing the fever which occurred on board the *Busbridge* to have been the jail fever, and of the mildest nature hitherto known, which Mr. Bryce is by no means

means willing to allow, where is the physician, who, having treated three hundred cases of such a malady, will assert that he has saved 297 out of that number, more especially under the circumstance of confinement to the narrow limits of a ship at sea. Mr. Bryce, however, says he has; therefore Mr. Bryce is unique. It appears from some passages in Mr. Bryce's book, (p. 69, 76, 90, 93,) that his wonderful success, giving every credit to it, has not been the consequence of mere alvine evacuation, but, in a very great measure, of the saturation of the system with mercury. Thus the inefficacy of mere alvine evacuation, without a mercurial saturation of the system preceding it, is proved by Mr. Bryce himself. "But observing that in some cases, in which, from the repeated doses of calomel, and a considerable use of the mercurial ointment, *the body was evidently affected with mercury*, the discharge of the putrid matters proved more free, also, that *all the secretions seemed increased, and that in these cases no relapse succeeded*, I was induced to give up the bark entirely, and to prescribe a mercurial course, taking care even in this stage to procure two or three evacuations daily, *till the body became evidently affected*, when I had the pleasure to see that the yellowness of

the eyes and skin quickly went off; and if there was any fixed pain or numbness, as mentioned in the history, it soon disappeared, generally after some free evacuations by stool of highly offensive and dark-coloured matters, even although none of that appearance had been voided for some days before," p. 69. I should not have thus enlarged on Mr. Bryce's pamphlet, were it not possible for the inexperienced to be misled by the assertion of a "success in the cure of a disease said to be similar to the malignant pestilential fever of the West Indies, which stands hitherto unparalleled," p. 93. See Account of the Yellow Fever, &c. by James Bryce, surgeon, late of the Busbridge East Indiaman, 1796.

Since writing the foregoing observations on the topography and diseases of St. Christopher's, I have been favoured with the following interesting communications:—The first is an extract of a letter to me from Dr. M'Donald, an eminent practitioner in Demerary, but in 1793 on the medical staff at Brimstone-hill. "On the return of the squadron under Sir Alan Gardener, from the first expedition against Martinique, they put into Bassaterre Roads, and waited there some time for the convoys from the different windward islands. Two officers of the ninth regiment

ment (one of them I think a Mr. Douglass, a relation of Colonel Campbell's, the other's name I have entirely forgot) dined on board the Duke, Commodore Murray, one of that squadron; next day, on their return to the hill, they were both, I believe on the same day, attacked with fever, and died in the course of a few days sickness. The fever immediately spread rapidly on the hill, and a great proportion of the garrison were carried off by it. From the hill the infection (for I have no doubt on my own mind, from what I saw of it) spread to the neighbourhood, viz. Sandy-point and Deep-bay. At the same time, the communication between the fleet and shore caused the infection to spread in its neighbourhood, Basseterre, and that quarter of the island. Whatever may be the cause of *now* doubting an infection to have existed, I believe at the period in which the fever raged, there was none: for the public of St. Kitt's were so convinced of infection, that it was with the utmost reluctance they attended the funerals of their friends.

I am, Dear Sir, &c.

JOS. MACDONALD."

Dockfour Plant. Demerary,

March 6th, 1800.

The second is from an eminent and much respected physician of Nevis:—

“ In compliance with your request of furnishing you with a general outline of the history of the malignant contagious fever of 1793, at Nevis, I have drawn up the few following observations; and have to regret that my distance from my place of residence deprives me of the means of being more particular. The first intimation I received of its being introduced into the islands, was from Mr. Joseph Maynard, of Nevis, who came passenger from England in one of the packets, and touched at Grenada. He informed me that (to use his own words) the plague was raging there, having been imported, as he understood, from the coast of Africa, in a ship lately arrived at St. George's; that no person who had been seized with it had recovered; and that it proved fatal in 48 hours, which had so much alarmed them as to induce them to depart without landing. From Mr. Maynard's description of this formidable fever, and the great intercourse subsisting between the islands, I laid my account with its being soon introduced among us, and it was not long before my conjectures were realized. Two brigs shortly afterwards arrived from some of the windward islands with a
very

very malignant fever on board, of which the mates, and several of the seamen, died while in the road. It was likewise understood, that the Captain of one of these vessels, (who sailed for Europe with symptoms of the disease), and most of his crew, were carried off in a short time after their departure, so that the man of war, under whose convoy they were, found it necessary to send men on board to work the vessel. Shortly after this the disease made its appearance among the inhabitants of Nevis. The cold bath (the good effects of which I have experienced upwards of twenty years ago in fevers of the typhus kind) was had recourse to in the very first case which occurred in the island, and from the commencement of the disease; a plan which was religiously adhered to afterwards with uncommon success, when regularly and judiciously administered. After your publication on the pestilential fever of Grenada, the mercurial course recommended by you was combined, which evidently rendered the treatment more complete.

I remain with esteem,

Dear Sir,

Your's very truly,

SHOTTO ARCHIBALD.

Stabroëk, Demerary,

March 19th, 1800.

A very illiberal opposition was made at this time to this treatment by an obscure practitioner of the island ; and it was singular, because the person who thus became Dr. Archibald's opponent, could not produce a single fact tending to discredit the practice. By this person, a Mr. M'Intyre, bleeding was considered as the only efficacious remedy. With a view to expose the folly of this assertion, Dr. Archibald had recourse to it in a case which offered every favourable indication for depletion. This was the case of a gentleman, Mr. Coxe, just returned from England, extremely robust and plethoric, who had the misfortune, almost immediately after his arrival at Nevis, to be exposed to the infection of the pestilential fever. The symptoms were extremely alarming ; and the determination to the head and liver, presented irresistible arguments for bleeding. The patient was accordingly bled in an horizontal posture, but scarcely two ounces had flowed from the vein, when deliquium, universal coldness, a cessation of pulse, and other symptoms, indicating approaching dissolution, took place. The arm was immediately tied up, and cold bathing was employed, which, with spiced wine, and other restoratives, at length cured the patient ; but his recovery was wonderfully

derfully flow. What would have been the event in this case, had the depletory system been persevered in? if fatal, on what principles can the employment of it in cases differently circumstanced, be justified? Many other instances of the deleterious consequences of bleeding were related by Dr. Archibald; a remarkable one was that of Dr. Lawrence and his family. The preposterous prejudice of this person extended to the destruction of himself and the whole family, who fell victims to pestilential infection and bleeding.

CHAPTER XII.

Tortola.

THIS, with several others of various dimension, form a distinct group, distinguished by the name of the Virgin Islands. They are singularly diversified, by the disposition of their parts, by the form of their mountains, by the huge unconnected masses of granite rock possessed by some, by the contrasted and irregularly stratified argillaceous rock of others, by the paucity of smooth surfaces, and by the arid aspect they almost universally exhibit when approached. A near view, however, divests them of this uninviting appearance ; and scenes as romantic and magnificent as they are beautiful, are repeatedly presented to the eye in navigating the meanderings and unruffled surface of Drake's passage. Argillaceous rock every where prevails, except in the curious peninsula of " Broken Jerusalem," an appendage of Spanish-town Island ; and here blocks of a beautiful grey granite, composed of felspat shoërl, and quartz of every possible figure,

figure, and of various size, giving a medium of 183 feet in circumference, and 33 in height, cover every where an argillaceous surface, fully six miles square. This singular assemblage of distinct masses of granite, confined to so limited a space, and no where else perceived, has the appearance of a ruined city; and from this peculiar circumstance it has derived its name. That this, as well as the confused disposition of the strata of schistus, and the disjointed, and in many instances, grotesque, structure of the whole groupe, derived their origin from volcanic causes, is highly probable, notwithstanding the absence of unequivocal testimonies of such having once existed. Tortola, the principal of this little curious archipelago, is extremely rugged, indeed, more so than any of the islands of the West Indies; nor is there, I believe, a gradual descent in any part of the island. In many places conical hills rise out of the bosom of an amphitheatre composed of many others still larger, and of precipitous sides. Where there are any level spots between the feet of the mountains and the sea, swamps render them extremely deleterious: and as these circumscribed plains bear on their surface the buildings of plantations, the inhabitants enjoy a very precarious health. To obviate this
evil,

evil, as it relates to the principal whites, their dwellings in general have been erected on pinnacles, whose aspect, in many instances, renders the unaccustomed stranger giddy ; and seems to preclude all hopes of approach, unless

Præpetibus pennis ausus se credere cœlo.

The soil, where it is accessible, is in general fertile and loamy ; and the central mountains being still clothed with their primeval woods, and of an altitude of more than 2000 feet, have sufficient attraction to supply a necessary degree of moisture. The bay, situated on the lee side of the island, constitutes a commodious and tolerably safe harbour. At the bottom of this stands Road-town, divided into two districts, called the old and new, and ranged along the foot of a high mountain, which renders it extremely hot. In the inconvenient distribution of about 200 houses, and in the general filthiness of the place, Road-town stands unequalled, perhaps, in the West Indies. Having, however, no marshes in its neighbourhood, it has not been remarked as particularly unhealthy. During the extensive ravages of the malignant pestilential fever of 1793, Tortola had the singular good fortune to escape infection. In 1796, an infected transport, having the remains of a draughted regiment

regiment (the number of which I neglected to note down when I received communications on this subject, in February, 1797, when I visited Tortola), introduced the disease, and made the inhabitants at length partakers of the common calamity. I derived my information chiefly from Drs. Porter and Saunderson. The general circumstances of the fever bore so strict a conformity with those of the fever of 1793, that it is unnecessary to dwell on them here. It is of more importance to state the result of the practice adopted by these gentlemen. I have already observed, that the introduction of mercury as a principal remedy in the treatment of this fever here, proceeded from the humane interposition of Dr. Stevens of St. Croix. Dr. Porter made use of calomel to a very great extent; and in one instance as far as 1100 grains, without the medicine producing any visible effect, the patient died. All, however, in whom salivation took place, recovered; and the general proportion of mortality in his practice was, as one to about seven. He mentioned a curious circumstance, which was afterwards confirmed by Dr. Saunderson, in whose practice indeed it was principally observed, that a small addition of jalap to calomel rendered the latter infinitely more active,

tive, which they attributed to the stimulus given by the former to the system. Dr. Porter employed the cold bath in conjunction with the exhibition of calomel, without exciting its action. He also applied to the forehead cloths soaked in a solution of nitre, which relieved the delirium and head-ach very much. Dr. Saunderson examined the bodies of eighteen patients who died of this fever; but the appearances, he said, particularly the state of the brain, were not similar to those observed at Grenada, and almost everywhere else where dissections have been made. In two subjects he observed the cystic duct either obliterated or totally obstructed; and he thence concluded, that an explanation arose of the difference perceived between the bile found in the gall bladder and that in the stomach, the former acquiring a ropy treacly consistence, by its confinement, and the consequent absorption of its more fluid parts. From thence also he imagined a decisive proof may be drawn of the black grumous matter found in the stomach, being blood and not bile. This ingenious gentleman employed calomel very liberally, but, he said, without the expected success. In one case he gave 1000 grains without perceiving any sensible effect; but he added, that no recovery was effected

ed but when a ptyalism was excited by the mercury. Bark and every other tonic he could think of, he tried in vain ; but the addition of jalap to the calomel he was satisfied had been attended with very salutary effect, not so much by the alvine evacuation which thereby took place, as by something stimulant in the mixture, which more readily excited the action of the calomel on the salivary glands. Whilst on this subject, he took occasion to mention a case of lues, which occurred to him at the time the fever was prevalent, in which a single grain of the same calomel produced a ptyalism. Dr. Porter mentioned also another case of lues, in which four or five grains produced the same effect. A most wonderful proof of the torpor of the system, whilst labouring under the influence of pestilential infection. Both Porter and Saunderson assured me, that bleeding, except at the very commencement of the disease, and in plethoric habits, was extremely injurious.

CHAPTER

CHAPTER XIII.

Saint Thomas's.

THE alternate sloping plains and mountains of St. Thomas's, give it an agreeable aspect; and the examination of it furnishes reasonable grounds of belief that the industrious application of judicious culture is alone wanting to render it a valuable colony. The evil proceeding from a too dry atmosphere, and the want of natural springs, to which St. Thomas is exposed, in common with the other Virgin Islands, cannot, however, be compensated. The windward side is the least mountainous, and consequently the most cultivated; but an annual produce not much exceeding a million of pounds of sugar, constitutes a proof of very limited improvement. The lee side is considerably more mountainous; and here is the bay or harbour of St. Thomas, the best in these seas. At the bottom of the bay stands the town of St. Thomas, situated at the foot of a high ridge of mountains, which completely furrounds it on the land side, except to the westward,

westward, where a pleasant, but narrow valley, stretches into the country. From this valley a long ridgy peninsula runs out, separating the principal bay from another more extensive, indeed, but less safe, called the Gregories. Very little cultivation appears any where near the town, except in the valley ; and indeed, save a few pleasant villas, where some of the more opulent merchants occasionally reside, the neighbourhood of the town seems to be overgrown with brush wood and small trees. The town itself, before the capture of St. Eustatius, was extremely trifling ; after that event, which proved destructive to the immense trade carried on with all nations at that island, St. Thomas's having been declared a free port by the Danes, became the entre-pôt of the Carribean islands. Since the French republicans have taken possession of the former, its little remaining trade was transferred chiefly to the latter, and partly to the Swedish singularly rocky Isle of St. Bartholomew. Such encouragement has given a new face to this formerly neglected place, and has prodigiously increased its population. The town extends along the margin of the bay fully a mile. It consists of only one street, but the houses are very numerous and much crowded : they are, however, generally very mean and filthy. There

There is scarce a house or mean hut which is not provided with a store for the purpose of exposing to sale the manufactures or produce of Europe and America. About the centre of the town stands the fort, a building familiar to Christian-fwaërn of St. Croix ; and the barrack within the walls is one of those towers or fortified castles erected by the famous Blackbeard, one of the troublesome and daring buccaneers who infested these seas about the beginning of the century. In the environs of the town there are two more of these towers of considerable strength and astonishing durability, to which Blackbeard and his piratical followers retired on the apprehension of danger.

When I visited this island in November, 1796, an accident furnished me with an opportunity of informing myself relative to the history of the malignant pestilential fever as it appeared there, in 1793, 4, 5, and at that time. The history was indeed a melancholy, but it was also an instructive one. An eminent merchant, M. C. G. Fleicker, with whom I had been acquainted at St. Croix, requested me to visit a valuable young German gentleman of his house, of the name of Schmalzer, who had arrived from Hamburgh only about ten days before, and at this time unhappily laboured

laboured under a fatal attack of this most dreadful malady. In Mr. Fleicker's house, the malignant pestilential fever had very frequently made its appearance during and since 1793, and, except in one instance, the captain of a Hamburgh ship, always fatally. No means, at least none sufficient for the eradication of the infection, had been employed on the death of the unfortunate sick, consequently the chambers, which were successively occupied by strangers from Europe, became a never-failing seminum of the pestilential contagion. A very few days after his arrival, Mr. Schmalder felt its influence; but, unhappily, two days of the disease had elapsed without any thing material having been done to stop its progress. Alvine evacuation even had not been resorted to by the medical gentlemen who attended; for, satisfied with ordering the administration of clysters, which produced no discharge of the accumulated contents of the intestines, the rest was left, I suppose, to nature. Late on the third day of the disease, my very ingenious and respected friend, Mr. John Ryan, of St. Croix, and myself, at the earnest request of Mr. Fleicker, saw the patient. All the worst symptoms had come on in the course of the preceding night; and he was now totally insensible,

VOL. II. Y alternately

alternately affected with coma, and the low muttering delirium peculiar to the disease ; and the surface bathed in cold sweat, was suffused by the dingy colour interspersed with livid blotches, which portend an almost certainly fatal event. The period at which the successful exhibition of the appropriate remedies could be made was irretrievably gone ; and although I could not flatter the friends of the sick young man with any prospect of benefiting him, yet I considered it as my duty to recommend such means as I had hitherto found beneficial in some instances similar to this. I therefore proposed the most assiduous employment of calomel, the cold bath, and nourishing food. Had this recommendation been strictly followed up by the attendants, it is not improbable that some good might have been done ; but alas ! the baneful influence of professional prejudice, and the still more pernicious operation of jealousy, even of a stranger who had no interests in view but those of humanity, counteracted the beneficial action which these remedies might have had. He died on the fifth day violently convulsed. I embraced this opportunity to enquire, and received the following information from Dr. Otto, which was confirmed by Mr. Fleicker, and other respectable gentlemen. The
devastation

devastation occasioned by the malignity of the disease itself, seconded by the unappropriate medical treatment of the practitioners, filled me with horror, whilst it added to my stock of evidence of imported infection, and of the superior efficacy of mercury in the cure of it. An apology, however, may be offered for Dr. Otto's want of success, in observing that the first appearance of the disease, and the Doctor's *début* in the climate were nearly concomitant, both having reached St. Thomas's in 1793, the first in the month of November, from Martinico, by an American vessel, and the latter from the Medical School of Copenhagen, in September, as the Danish king's physician to the garrison. This gentleman's experience, however, during the subsequent years of the epidemic, should have thrown light on its nature and treatment; but as this did not happen, the destruction was universal wherever it attacked. The symptoms were uniformly similar to those I have described; but were we to judge from the ravages committed, their violence must have been, if possible, greater than was experienced in the windward islands. Dr. Otto candidly assured me that in his practice, five out of six died; and many gentlemen of the place, particularly Dr. Tucker, who has long retired from

medical practice, but whose curiosity on the present occasion, led him to a strict enquiry, Mr. Jennings, and Mr. Fleicker, affirmed that the number of recoveries was so very small, as not to be deserving notice; and that, with truth, it might be said, that almost all who were seized with the disease, fell sacrifices to it. To sailors, soldiers, and all Europeans or Americans, strangers to the climate, the infection was, during the first two years, chiefly confined; but afterwards the inhabitants, without exception, whether Creoles or foreigners, equally suffered. The prodigious number of grog-shops, and houses of low dissipation, which the extended commerce of the place has given encouragement to, have been a principal receptacle of infection, and have consequently been the principal cause of the frequent recurrence of the disease. It is not improbable that the filth which so generally prevails, the crowding of the houses, and the effluvia of some adjoining marshes, may have, at least, powerfully predisposed the persons of the inhabitants, as well as those of strangers, to be acted on by the contagion; and in this respect the violence of the disease at Fort Royal, Martinico, as well as here, may be accounted for. It is an extraordinary circumstance, and highly meriting our attention, that

that until the arrival of the American vessel from Martinico, in 1793, no disease bearing any resemblance to this ever occurred at St. Thomas's. The endemic morbid causes annually excited, during the hotter months, remittents, intermittents, and other diseases depending on the action of marsh miasma, but never to any alarming extent.

The medical practitioners who attended the sick in the malignant pestilential fever, were Dr. Otto, the king's physician (a situation similar to garrison surgeon in the British service), and a Dr. Towers. The first has engrossed almost the whole practice; and has sent to the shades a multitude of unfortunate people; for, frequently ships have been completely stripped of their crews. Until my Essay on this disease was, a few days before I visited St. Thomas's, put into this gentleman's hands by Dr. Stevens, of St. Croix, he had not formed any just idea of the pathology of this pestilence, and consequently, had not fixed on any rational mode of treatment. The routine of his practice was an irregular adoption of the means employed by most of the old West India practitioners, in the remittents of the country. He had recourse frequently to bleeding at the very commencement of the disease, but its inutility

tility may reasonably be inferred, from the almost universal mortality which took place. After reading the Essay, he determined on making use of calomel, and in one case, the Hamburgh Captain already mentioned, with this remedy, he excited salivation, and was successful—a prodigy at St. Thomas's.

Before I quit St. Thomas's I may observe, that Dr. Stevens, of St. Croix, with a warm zeal for the extension of the benefits which result from the judicious adoption of the mercurial treatment of the malignant pestilential fever, did not only exert himself to promote the practice at St. Thomas's, but, being at Tortola when this fatal fever was introduced there, late in the year 1796, recommended it to the practitioners there. The result, although not so happy as we might wish, was nevertheless extremely beneficial, and, no doubt, many cases were saved by mercurial salivation, which otherwise treated, would, with certainty have terminated in death.

CHAPTER XIV.

Sainte Croix.

M. ROCHEFORT, (Hist. Nat. et Mor. des Iles Ant. p. 349,) on the authority of a Mr. Bristol, an English traveller, informs us that this beautiful island constituted the original colony of the Caribbean Indians in the Antilles, about the 11th or 12th century. Mr. Bristol is said to have acquired his information among the Apulaches of Florida, the supposed parent stock; among the Caraïbes of Guiana, and those of the West India islands, about the year 1653: but how far an opinion founded on the tradition of an unenlightened people, and handed down from so remote a period, can be considered as more than illusory, or at most as amusing, I shall not take upon me to say. The Caribbean name of Sainte Croix, ay-ay, signifying a first settlement, offers something like stability to the conjecture; and the many curious remains of Caribbean ornament, or objects of worship which have been discovered in the unsettled district of the island,

and no where else in the western archipelago, compared with what we are told, by the same writer, constituted the fundamental principles of the religious worship of the people, from whom the Caraïbs sprung, strengthen that equivocal evidence. The whole story is, however, held by Du Tertre as a mere fiction; and it must be confessed, that after making sufficient allowance for the prejudice he cherished against Rochefort, his reasons are well founded. The southern continent of America gave origin to the Caribbean settlements of the Antilles, and the parent stock, are said to have been the Galibis. (tom. ii. p. 360.) But if we make the Caraïbs of Guiana the original stock instead of a colony, our theory will be more consistent with name, with language, with manners, with the rude state of savage navigation, and with the direction of the prevalent winds, which must have facilitated or retarded, or rendered impossible so distant an emigration. The rival priests may be reconciled after all, by supposing the windward islands to be peopled from the southern continent, to leeward of which they are situated; and the natives of St. Croix to have been a colony of the mild and gentle race, the aboriginals of the larger leeward islands. The present name the island de-

rived

rived from a beautiful church of the form of the Holy Cross, said to have been built by the Dutch whilst they held possession of it. This the Spaniards afterwards destroyed, but the name still remained. The colonizing spirit of the English, Dutch, French and Danes, and the jealousy of the Spaniards of Porto-Rico, have rendered St. Croix an object of contest, and thrown it into the possession of a variety of masters, ever since the beginning of the seventeenth century, when the English and Dutch jointly possessed. In the year 1649, the English obliged the Dutch, after a bloody conflict, to relinquish the island; but the Spaniards dreading the enterprizing spirit and proximity of such neighbours, very soon after dispossessed them in their turn. The years 1649, 50 and 51, produced a variety of changes, the consequence of the petty warfare carried on by Europeans for an establishment in the vicinity of the rich possessions of the Spaniards: but at length the resources of M. de Poincy, the first Governor-General of the French West Indies, secured by conquest the sovereignty of the island to his country. After the death of De Poincy the colony sunk into insignificance, and the island was abandoned by the French in 1696, who eagerly embraced the more flattering prospects

spects which the settlement of St. Domingo held out. (Hist. Gen. des Voy. tom. 50, p. 353). Thus abandoned, St. Croix became the asylum of pirates and buccaneers, till at length it fell by purchase, in the year 1733, into the hands of the Danes. It is probable that the cultivation of the land was by no means the object of the settlers before this period ; for a gentleman now living, who became a colonist of St. Croix in the year 1738, informed me, that at that time there were only five houses in Christianstaëd, and that the whole island was covered with wood and swamps ; and the air consequently proverbially sickly. Since that period, the encouragement held out to the planters by the Danish government, has produced a wonderful change ; and St. Croix, instead of being a wild uncultivated and unwholesome country, has become one of the most pleasant, beautiful, and wealthy islands in the West Indies. It is, in fact, a perfect garden, laid out in regular parallelograms 2000 feet broad, and 3000 long, separated from each other by narrow spaces planted with useful or ornamental shrubbery or trees, and the whole rendered accessible to carriages of every description, by the construction of roads not inferior to the best in England. The principal towns are Christianstaëd,

tianstaëd, the capital situated at the bottom of the principal bay, called by the French Baffin, now corrupted into Basend: and Fredericstaëd on the western extremity of the island. Both are laid out in exact geometrical proportion; spacious streets, or spaces for that purpose, intersecting each other at right angles, leave large squares for the purpose of building; and a complete persflation of wind being the immediate consequence, the inhabitants are usually very healthy. Christianstaëd, although it stands on a surface extremely uneven, presents a very interesting aspect, by the neatness and elegance of most of the houses, by the stone piazzas and galleries with which they are ornamented, by some handsome public buildings, and by a fine intermixture of tamarind and other wide spreading trees, which give a rural and romantic cast to the whole. The number of houses is about 600, including the suburbs or portion allotted for the residence of free people of colour, called the Free Gadé; and the materials which compose them are chiefly stone, or brick and lime. About the centre of the town, on a kind of small promontory which runs a little into the sea, stands the principal fortress, Christianswaërn, a beautiful object in a landscape, but in point of real utility, altogether

gether insignificant. Another more pleasing object, situated nearly opposite to Christianfwaërn, from which it is separated by a narrow channel, is the islet of Protestant Key, which Mr. Morgenstierne has contrived to embellish in a very singular and picturesque manner. The harbour, or basin, is formed by this islet, and a ridgy point which extends considerably to the north-east: but its only safety proceeds from a curious ledge of coral rock, which running from the north-east point towards the north side of the island, constitutes a barrier against the violence of the ocean. Within this, which is generally dry, all is tranquillity, without all is tumult. In the low northern and eastern quarters of the town, there is occasionally an accumulation of moisture, which deprives the atmosphere of that salubrity, which it every where else possesses: but the exhalations are not of so deleterious a nature as to excite much alarming sickness. The ridges on which Christianstaëd stands, are the branches of considerable central eminences, which form an amphitheatre of some extent; but being in some measure open to the east and north-east, no interruption of the trade wind takes place. Fredericstaëd is somewhat differently circumstanced, for the ground on which it stands, or which lies in

in its immediate vicinity, being on a level with, or lower than the surface of the sea, is extremely moist and marshy ; and consequently the health of the inhabitants suffers annually severe attacks of those fevers and other disorders proceeding from the action of the miasmata, which load the atmosphere during the hot months.

The peculiar character of the disposition and nature of the soil and rock of St. Croix, may be discriminated in a pleasing manner, by viewing the whole from the summit of the central mountain (Wood's Hill), which rises to an elevation of about 1000 feet, immediately behind Christianstaëd. Here two very different aspects of country are seen. To the north-west and south, a fine broad level of marly, or calcareous, or calcareo-sabulous soil, separated from a more narrow wavy plain of almost unmixed clay, by a crescent of ridgy argillaceous hills, here and there terminating in rounded summits, and closed by a more insulated massy mountain, whose distance lends it a bluish tint. To the east, one uneven surface, out of which rise numerous conical hills, so thrown together as to leave no room for conjecture what the design of so singular a formation can be. This division of the island, in fact, exhibits an adventitious assemblage of broken, craggy,

craggy, mis-shapen masses of earth and stone, in which neither fertility nor beauty have place. St. Croix, as well as Barbadoes, had its elevation probably from the operation of a submarine volcano; but the coralline structure of the latter not resisting so much as the argillaceous of the former, no vestiges of volcanic influence can be traced on it, further than perhaps giving some degree of fusion to the metallic part of the general mass, and consequently a correspondent or martial tinge to its more solid parts. Whether we are also to attribute to the same cause, the *suck-holes*, as they are called, so frequently met with in St. Croix, I shall not take upon me to determine, but leave to the consideration of the reader the obvious properties these singular openings possess. They always appear at or near the foot of hills of a dubious nature; they never appear active but during the rainy season, when they are distinguished by a violent ebullition without heat, of a fluid very strongly impregnated with blue clay, not dissimilar to the boiling pits I have observed in some half-extinguished volcanoes, the heat only being wanting; their circumference varies from 18 to 40 feet, within which any heavy body instantly sinks to an unknown depth; all the surface around for several feet,

feet, is more or less affected by this, so as to be rendered extremely unsafe; they are found in much greater number in the east end of the island than any where else. Whatever the cause may be to which these phenomena are to be assigned, they are certainly singular, for they do not exist in any other of the West India islands, as far as I know.

In moist years the soil of St. Croix is wonderfully productive, but dry weather, to which it is much subject, deprives it of its vegetative powers in a degree proportioned to its aridity; the capability of the soil is consequently unequal, and varies in a ratio of 1 to 3. The rock in general is argillaceous, aluminous or shivery, with martial septa: but on the south-western and western divisions, the rock and soil are calcareous, and the latter is particularly distinguished by its superior fertility. A curious variety of unattached stones and fragments of rock is found scattered over the more hilly surface; the principal of these are pure quartz, and ramifications of it shooting into the interstices of argillaceous rock; pudding stone; tuberculous stone; some beautiful fragments of steatites; distinct argillaceous masses, greenish, honey-combed, and porous; calcareous stones interspersed in their substance with an
infinite

infinite number of clayish nodules; calcareous striated spar; and some brecciaë with a flaggy or honey-combed surface. The layers of schistus are variously inclined; some, as those on which Christianstaëd stands, vertical; some deviating about 10° , whilst others are met with nearly horizontal. Amidst the calcareous and marly beds in which this island abounds, an immense quantity of marine shells, bivalves chiefly (*chamæ* & *pectines*) is found. On the plantation called La Reine, in sinking a well of considerable depth, calcareous and marly beds, with an intermixture of shells, 150 feet thick, were pierced through. In some of the bays there are tracts of a curious marine production met with, fully three quarters of a mile in length, and of considerable breadth, improperly called by the inhabitants “sand stone.” This substance, in fact, is a deposition from the sea, of a corally nature, and strongly effervesces with the nitrous acid. It differs, however, very essentially from the corallines, in as much as it is of a firm texture, and of a gritty grain; yet its surface is milleporous, its substance solid, and so tenaceous, that a single branch of it, only half an inch thick, was sufficient to support the weight of my body. That it is of extraneous origin is evident from the quantities

tities of shells and coralines, and the fragments of the adjacent argillaceous rock embedded in it. From the resemblance this substance bears to the calcareous rock I have frequently met on the surface in the hills and interior parts of the island; as well as that I have seen dug up, the substratum of marl, it is not improbable that it presents a specimen of these at the period of their emerging from their common parent the sea. And I am more inclined to think so, because in the rocky island of St. Bartholomew, the detached plates or lamina of calcareous rock called "ringing rock;" from the sharp bell sound they emit when struck with a hard body, are precisely the same as the substance observed in Will's and other bays of St. Croix. Now the ringing rock of St. Bartholomew is found chiefly on the summit of the highest cliffs of the island.

Water in an island destitute of springs, and subject to dry weather, bears a value unknown in countries differently circumstanced. In many of the Virgin Islands rain water collected in cisterns, has been frequently sold at the rate of two shillings and half-a-crown the pailful. In St. Croix a very ample spring has been found in Wood's Hill, which, being inclosed by a circular terraced wall, is well preserved, and consequently is of no

small importance in this arid country. This spring exhibits a singular phænomenon. I have drank of its water at two seasons of very opposite temperature, and the result was uncommon; when the thermometer indicated a temperature of 87° in the atmosphere, and after much drought, the water was perfectly good and sweet: immediately after a long tract of very rainy weather, and during a temperature of 79° or 80° , the water became brackish, or had a saltish bitter taste, leaving a very unpleasant impression on the palate. The water of wells in St. Croix is generally possessed of the same unpleasant quality at all times, whatever changes in the temperature of the atmosphere may take place; and this may be considered the more extraordinary, as it is frequently necessary to penetrate 300 feet below the surface, before water issues. I may here observe, that on many plantations bordering on the calcareous country, and situated on the southern declivities of the central ridges, there are what the planters call “nitrous or sulphureous patches of soil,” the canes planted in which, constantly acquire, during the whole progress of their growth, a sulphury yellow colour, and a burnt or scorched appearance, and never arrive at maturity. The temperature of the atmosphere of St. Croix,

Croix, if I may be permitted to judge from the observations made during a residence of five months, is much more moderate than that of the windward and larger islands, notwithstanding the long tracts of dry weather the island is subject to. My observations were made during the months of September, October, November, December, and January. The greatest height of the thermometer took place on the 30th October, viz. 89° , and the lowest on the 25th November, viz. 76° at one P. M. the medium is consequently about 82° ; of 153 days 55 were rainy, no proof, we should imagine, of the aridity of the island; but the year 1796 was very uncommon in that respect. During the southerly and westerly winds which prevailed in the month of October, 15 days occurred, remarkable for dreadful thunder and lightning. In the course of this month, the apparently increased proximity of the islands St. Thomas, St. John's, and Tortola, all which lie from fifteen to eighteen leagues to the northward, was very remarkable. On certain days these were drawn so near as to enable the eye, without the assistance of a spy-glass, to distinguish clearly, cultivated fields, houses, and even trees at the horizon of the ridges. The days on which this phænomenon was most observable, were hot,

unclouded, calm, and generally preceded by a moist atmosphere and stormy weather; and the thermometer ranged from 86° to 88° . This curious deception has not been often remarked I believe. Mr. Jefferson has noticed it in Virginia; but the instances that gentleman has given are still more singular, and have taken place on the coast "where the water prospect is without limitation," and in the interior country. (Notes on Virginia, p. 118, 119).

St. Croix, in common with other tropical countries, is annually subject to the remittent fever, which, however, seldom acquires the violence of the highest grade; dysenteries also occasionally appear; but intermittents are rare, and seldom depend on local derangement or congestion. The state of the weather during the latter months of Autumn and first of Winter, regulates the appearance and the degree of violence of these endemic diseases.

An accident gave me an opportunity of acquiring some knowledge of the importation of infection into this island in 1793. During my residence at St. Croix, in 1796, some American vessels having been captured by the French, and carried into Guadaloupe, under pretence of their supplying the British, the crews were sent to this
island

island in the month of October ; and that of one of them were afflicted with the malignant pestilential fever. The Danish king's physician, Dr. Gordon, a gentleman of great abilities, and of the highest respectability at Christianstaëd, together with his partner Dr. Adams, attended these men. These gentlemen, at my request, informed me that the symptoms were precisely those of the malignant pestilential fever ; but that the progress of the disease was such, as left no time for the administration of medicine. Four or five of the sick died ; and the alarm this occasioned to the government, heightened by the recollection of the ravages the same calamity produced in 1793 and 1794, has not been exceeded in any of the islands, during any period of the existence of the pestilence. As the alarm, however, was justly founded, and as the exertions of government to ward off the danger were proportional, and as in consequence of these, nothing like infection was communicated to the rest of the shipping ; a striking proof was presented of the good which may be done by a government, somewhat arbitrary, in a season of danger. (See Part iii. ch. i.). My general information relative to the visits the pestilence has made to St. Croix, I have been indebted for to the politeness of the ingenious

gentlemen I have named, as well as to that of others. It appears, that during the months of August, September, and October, of 1793, this dreadful disease made its appearance in the harbour of Christianstaëd, and prevailed almost universally among the shipping; but that, although thus prevalent on ship-board, and although the sick of the king's armed vessels, as well as those of the Danish merchantmen, were admitted into the king's hospital under Dr. Gordon's care, which is situated in the eastern division of the town; and although many sick sailors of American vessels, were brought on shore, and placed in houses in town; yet the disease did not appear in one instance among the inhabitants. This, as the importation of the disease was clearly traced to vessels from the windward islands, at first seemed very extraordinary; but my surprize was lessened on being desired to consider that the danger attending a communication with the sick was thus early known; and that the attendants on the sick were always blacks, who, in this climate at least, possess an ideosyncrasy incapable of being acted on, to any considerable degree, by pestilential contagion. The disease again appeared in 1794, and attended with the same circumstances. Dr. Gordon had under his care, in the king's hospital,

pital, 82 patients in the pestilential fever, of which number 17 died; but in his general practice, the proportion of mortality was somewhat greater, or as 1 to 4; which, it must be confessed, was being tolerably successful, considering the mode of treatment. Dr. Gordon being at first unacquainted with the nature of the disease, treated it in the strict tonic method; but finding it to prove fatal in almost every instance, he laid aside bark and wine altogether; and depended on general evacuations, and followed them up with the cold bath and blisters. Under the last treatment the proportion of mortality was that I have stated. Another medical gentleman of Christianstaed, of considerable eminence, Dr. Claxton, informed me that he trusted entirely to the tonic plan most rigidly followed up, but as he paid no attention to the proportion of mortality, it was impossible to ascertain his success. This, however, was amply compensated by his partner, Dr. Woods, who assured me that very few indeed recovered in their practice. Dr. Gordon, possessing a most enlightened mind, and open to the approach of truth, was satisfied, from a review of Dr. Rush's and my sentiments, that the plan he had proceeded on was founded on erroneous principles; he therefore readily adopted the mercurial

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treatment,

treatment, and attempted to combine it with the depletory one of Dr. Rush, in the month of December, 1796, and January, 1797, when the same fever again appeared among the shipping. The combination of copious bleeding, which was judged necessary in the robust plethoric habits of the Danish sailors, I believe, proved unsuccessful; whether from its being employed too late in the disease or not I cannot say: but the cases in which salivation was excited by the mercury, without exception, recovered. How far Dr. Gordon's experience of this remedy has been extended since that period, I am unacquainted, not having been favoured with any communications on the subject. Whilst in conversation on the malignant pestilential fever with Dr. Gordon, he took occasion to observe, that in the remittent fever of the country, which every year appears with more or less violence, he constantly makes use of the cold bath, especially if the inflammatory symptoms run high, and if the head-ach should be uncommonly severe. The patient has pailfuls of cold water dashed over him, and after being well wiped, he is put to bed, and a large draught of warm sangaree* is given to him. The usual consequence is a profuse diaphoresis, and re-

* Madeira wine, and water, sweetened with sugar.

lief from all the more distressing symptoms. The fever having been thus lessened or removed, recourse is had to bark and other tonics. This practice, the Doctor assured me, has been attended with uniform success. It affords a curious illustration of the opposite actions of the same remedy in two different morbid states of the body, and carries on the face of it a conviction of the necessity of the qualified employment of antiphlogistics in the treatment of pestilential inflammation.

I may observe, that the practice of exciting the action of the absorbents in dysentery, which is sometimes very fatal in St. Croix, by means of preparations of mercury, has not as yet been introduced. Dr. Gordon informed me, that in dangerous cases of this disease, he has constantly recourse to a species of the *triumfetta*, distinguished by the specific name *femitriloba*, and by the trivial one of *bur-bush*. This, he told me, was originally recommended as an antidyenteric by the late ingenious and enthusiastic botanist, Colonel Van Rohr, of St. Croix. The Doctor assured me that a decoction of the root of this plant is almost uniformly successful in the most dangerous cases.

It is certainly a curious circumstance in the
history

history of the pestilential fever at St. Croix, that the erysipelas was epidemic in Christianstaed at the periods of 1793, 4, and 6, when the infection of that fever, introduced from the windward islands, so prevailed in the shipping. None of the inhabitants, it appears, were seized with the latter, but the former was confined to them exclusively. Let the reader compare this with Sydenham's opinion. " Certé, me judice, in inflammatione ista, quam latini ignem sacrum appellant, quamdam pestes imaginem non obscuram intueri licet. Et fere invadit hoc malum ut pestilentiaë, cum horrore, et insequenti calore febrili, ita ut qui ipsum ante non sunt passi, existiment lue pestifera se corripere, donec tandem in crure aut alio loco sese affectus prodat." (Sect. ii. ch. ii. p. 111). Was it in this form the contagion shewed itself among the inhabitants?

CHAPTER XV.

The Efficacy of Mercury on board the Flora Transport. (Part. I. Ch. 6th.)

*“ Flora Transport, Carlisle Bay,
10th April, 1796.*

“ DEAR SIR,

“ I SHOULD esteem myself most ungrateful if I did not take this opportunity, before I leave Barbadoes, of returning you thanks for the kind assistance and advice you gave me in regard to the sick on board this transport when at sea; and of informing you of the result of the practice you recommended to me.

“ From the beginning of this expedition, the Flora seems to have been tainted with the infection of the malignant pestilential fever; for I have very lately understood, that only fourteen days before we embarked in her, she had landed some French prisoners from the West Indies, who had probably brought the infection with them. We embarked in her in the month of November, 1795, I believe the 15th, and sailed
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on the 10th February for the West Indies ; and were put back to Cove (the place we had left) four days after. Two days after our return, we had fifteen men attacked in one night ; and in the course of the two following days, 48 more. The ship was immediately reported to Dr. Jackson, Inspector of Hospitals, who applied to General White, who ordered the sick to be landed at the hospital on Spike Island, and the men who had escaped on Hawlboling, where they were encamped three days. During that time the ship was cleaned, fumigated, and all the berths taken down, and new hammocks and blankets given to the troops, when we re-embarked, which was on the 22d. The number of troops was then 144, ship's company 22, women and children 11, and officers 6 ; in all 183, without one sick person on board, when we sailed on the 25th. On the 26th and 27th, seven men were taken ill, which I treated in the ordinary way. From this time till the 8th of March, on which day one of the seven died, the number of the sick increased to 23 ; and unfortunately Colonel Baillie, your friend, was taken ill on the 7th. I mention the circumstance of the Colonel's illness, because it was his great desire of seeing you (and which, owing to the calms which
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most unfortunately happened from the 8th to the 11th, we could not accomplish till the 12th), that gave rise to my using calomel to the troops on board, by your direction. I began with ten grains of calomel every three hours to the whole of the 23 I had on board sick, and continued it till their mouths were affected. The effect was soon conspicuous; for in thirty-six hours after I had begun the medicine, I had the pleasure of finding no less than eighteen convalescent. I have had since then in all about fifty sick, and have lost only three men during the passage. I must observe, that the mercury in these three men who died never affected the mouth, (it appears, however, that one of the three had not taken any mercury) their breath had, indeed, the mercurial foetor, but I could not produce ptyalism. I likewise observed, that the men cured by mercury never relapsed, and others who had been ill before I began with the mercury, relapsed, and were cured by it.

“ The women on board were affected by the same disease; and one, a sergeant's wife, who had her catamenia, at the same time, was perfectly cured by taking mercury, and every thing went on as if she had not been under the influence of any medicine, although the salivary glands were thoroughly affected. I attributed my
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losing so few men, to my pushing the mercury in the vigorous manner I have mentioned; for in the other ships of our regiment, the Clarendon and the Isabella in particular, the mortality was much greater; one lost eight, and the other nine men, under circumstances, except the bold exhibition of the mercury, precisely similar. The mercury in these ships was exhibited only until the pain in the head abated, and then it was laid aside entirely.

I am, dear Sir,

Your much obliged humble servant,

JOSEPH RONALDSON,

Ensign and Assistant Surgeon, 99th Reg."

Doctor Chisholm,

&c. &c.

Before the reader proceeds to the consideration of the following cases of the Grenada fever of 1793, already published as an Appendix to the first edition of my Essay on that fever, it may be proper to call his attention to some strictures I have very lately seen on that publication generally, as well as on these cases. Dr. Jackson, of the St. Domingo Hospital Staff, whose character I esteem, and whose professional abilities I respect, has assumed the office of umpire in the contested point relative to the foreign or endemic origin

origin of the fatal fevers which have prevailed in the West Indies since the beginning of March, 1793; and in North America since the beginning of August of the same year; and with a dictatorial decision, unbecoming the true physician, and which I little expected from the usual modesty of Dr. Jackson, he gives his suffrage for the endemic origin of both. Of the fever of Grenada he thus speaks: “ A fever said to be malignant and pestilential prevailed in the island of Grenada, in the year 1793. It appeared to be of a violence unusual in that island; and was therefore supposed to depend on a foreign cause. This cause was sought for, and discovered, *without much search*, in the ship Hankey, lately arrived from Boulama, on the coast of Africa. The fever was thus said to have been imported from Africa, and it has further been said to have extended, from the pestilential source of Grenada, to the other islands of the West Indies; it has nearly annihilated British armies in those islands, and it has appalled the English nation in England itself. The disease, *in vague description*, has a number of formidable attributes; *in the detailed histories of some cases annexed to the description*, it appears to be the endemic of tropical climates, in some measure epidemic, and uncommonly fatal among Europeans

Europeans newly arrived in the warmer latitudes. If this be true, it is scarcely necessary to say, that it is not contagious, or that it was not imported by the Hankey. This remark arises from a perusal of the treatise published upon the subject; the evidence of Mr. Paiba, lately laid before the public by Dr. Smith of New York, declares the reputed origin to be a fiction." It would be improper and unnecessary to detain the reader by a recapitulation of the arguments I have adduced in the preceding parts of this work, in vindication of myself, from charges founded on the inconsistency and illiberality of one, and the slanderous aspersions and hasty conclusions of the other of the New York partizans of the Boulama Association. Nor shall I here enter into any refutation of the remarks of Dr. Jackson, satisfied with the uprightness of my motives for publication in the first instance; well assured from reiterated observation, and from the result of the observation of others, that the description is not *vague* (see Johnson's Dictionary), but *characteristic* of the malignant pestilential fever; having the most decided proofs of the importation of infection by the Hankey into Grenada, and of its diffusion afterwards among the other West India islands by similar means; and
having

having good reasons, from my knowledge of Dr. Jackson's general character, for believing I have said enough to convince him he has been precipitate in forming his opinion. If Dr. Jackson has been assisted by his experience and observation in St. Domingo, in forming this opinion, he has evidently proceeded on false principles; for it will appear from the first and fourth Parts of this Work, that the pestilential fever had almost universally disappeared in the West Indies about the period of his arrival in the West Indies, April, 1796. With respect to his stricture on the following cases, I need only make use of his own words, in refutation of his decision. " In looking over the descriptions of the preceding pages, an opinion will be probably formed, that the fever which prevailed among British troops on the continent of Europe, at the Cove of Cork, in Ireland, and during the passage to the West Indies, is not precisely the same, with that which committed such ravages in St. Domingo; yet, if two cases of those diseases be examined as they actually appear, unconnected with collateral circumstances, it will not perhaps be an easy matter, to say in what the difference consists. The source from which the cause proceeds is known to be different; a fundamental

and radical difference of action unquestionably does exist ; but it is too subtle to be appreciated or defined, &c." An outline of the History and Cure of Fever, endemic and contagious, p. 213—222.

But if the following cases, are cases of the concentrated endemic of the West Indies (the yellow remittent fever,) then is the concentrated endemic a contagious disease, which Dr. Jackson himself does not admit ; nor is it a conclusion warranted by the experience of all practitioners in the tropical climate. A few words on the mode of treatment, which Dr. Jackson so strongly reprobates : Dr. Jackson is widely mistaken if he entertains the idea that I have considered calomel as an universal remedy, and as an infallible cure of contagious and endemic fevers. Nothing I have advanced sanctions such an assertion. What I have said, and what I maintain, is, that calomel is certainly the best remedy hitherto discovered in the treatment of these fevers within the tropics. The exhibition of it requires judgment ; and to excite its curative action, often demands the aid of several auxiliaries and adjuncts. But if Dr. Jackson has discarded calomel as a principal remedy in these fevers, has he substituted any remedy or any mode
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of treatment more efficacious, or of more certain effect? I fear not; for he informs us, (p, 242), that "the endemic fever of St. Domingo, from its own nature, committed great destruction; of European subjects newly arrived, scarcely one in three attained established health; in some situations, and among a certain class of subjects, the loss was greater than even this."

The following cases, which have not, except two or three, been selected from many hundred, will, perhaps, illustrate the preceding history of the malignant pestilential fever, and throw additional light on the mode of treatment I found most successful. The four first I have been favoured with by my late partner, Mr. William Campbell, deceased, a gentleman possessed of much ability, and diligence in the discharge of his professional duties. His death has been as severely felt as it has been sincerely regretted by the society in which he practised. At the time these four cases occurred I was confined with a violent attack of hepatitis; the most common, and if not properly treated, the most dangerous endemic of the country. The first is inserted chiefly from the circumstance of its being the *first* which occurred in Mr. Campbell's practice: Dr. Smith, of New York (Med. Rep. vol. i. p.

485), remarked the singularity of stating this as the first case which occurred, when I have elsewhere said, that Captain Remington was the first who suffered by the infection. The inaccuracy is done away by adding, "in Mr. Campbell's practice;" but, surely no room is given by it for discrediting the history of the origin of the disease. I have explained myself with sufficient minuteness in Part I. Ch. 1.

APPENDIX.

No. I.

*Cases of Malignant Pestilential Fever at Grenada,
1793.*

CASE I.

THE carpenter of the ship Charlotte of London, Stephen Holman commander, was attacked in the night with the usual symptoms of fever, attended with pain in the eyes, which appeared very much inflamed and watery. He likewise complained of pain in the legs, near where the gastrocnemii muscles join to form the tendo achillis. His stools were of a dark green colour, and very offensive: were evacuated by means of a solution of salts and tartar-emetic; fourteen hours after which the fever was considerably abated. At bed-time took a diaphoretic anodyne draught; on the following morning was entirely free from fever, and was ordered the

bark every hour. In the evening was very low; his pulse small and quick; no febrile heat; his stomach rejected whatever he took; at bed-time had an opium pill, but passed a very bad night. On the following morning all the unfavourable symptoms were increased; the smell of his breath very offensive; and the irritability of his stomach so great, that even opium was rejected as soon as swallowed. Had him carried on shore, but was soon after seized with convulsions, and died in the course of the day. He passed no urine from the time he was taken ill till his death, and yet never complained of the smallest uneasiness from that cause.

CASE II.

March 21st, 1793, went on board the ship *Baillies*, William Sym commander, to see *John* ———, one of the crew. Found him very low, his pulse pretty full, yet it could be stopped by the slightest compression; had no febrile heat; his eyes and skin were perfectly yellow; his stomach in such a state, that whatever he took was rejected immediately; complained of violent pain in the right side: a few spots of a dull purple colour were observable on his breast and shoulders; urine scanty, and of a pale yellow colour.

colour. He said he was suddenly attacked, two days before I saw him, with violent headach, dimness of sight, and cold shivering, which were very soon after succeeded by convulsions; that continued about two hours, as he was told; for he was by no means sensible himself either of their presence or duration. Upon recovering from the convulsions he found himself in a hot fever, with violent pain in the legs and thighs. These symptoms continued without any abatement till the end of thirty-six hours, although he was for the greatest part of that time in a profuse perspiration. Being fully satisfied that this disease was the malignant fever which prevailed at the time, and being at the same time well convinced that the common mode of practice in fever was by no means successful in this, I thought it necessary to try the effects of some medicines more powerful than those in common use; and my choice in this instance was directed to mercury, for two reasons: the first was the evident presence of local affection; the last, and perhaps the most cogent of the two, was its being strongly recommended by Dr. Chisholm; in whose hands I had seen it productive of the happiest effects, in a variety of other disorders. The patient was accordingly ordered to

take a pill composed of four grains of calomel, and half a grain of opium, every four hours. 22d. The symptoms much the same; his stomach had frequently rejected the pills during the course of the day. Ordered to persist in their use. 23d. In the morning the symptoms the same as on the preceding day; but, towards evening, the uneasiness at stomach had greatly abated, and he had rejected only one of the pills during the whole day. Ordered to continue the use of the pills. 24th. About noon the mercury had evidently affected his mouth, and he was spitting plentifully. He complained of nothing now but weakness, every other symptom of the disease had disappeared, excepting the yellow colour of his skin and eyes, which went off gradually. By the use of fresh diet and a little wine, he was able to do his duty in the ship, in the course of eight days.

CASE III.

April 10th. Stephen —, of the ship *Bailies*, a lad about seventeen years of age, was suddenly seized, about noon, with convulsions, which lasted about an hour and a half. When he began to recover, complained much of a pain in the legs, back, head, eyes, the latter of which were remarkably

remarkably inflamed and watery; his pulse very quick and hard; his skin, although at the time in a profuse perspiration, felt very hot, and on withdrawing the hand after touching it, a sense of heat remained in the points of the fingers for some time; was evacuated by a solution of salts and tartar-emetic. Towards evening the fever began to go off, but was succeeded in the night by coma, to such a degree, that at eight o'clock in the morning of the 11th, every attempt to rouse him, or make him take any thing, was ineffectual. At that time respiration was laborious; and his breath was so offensive, that one could smell it at the distance of two or three yards. Was again attacked with convulsions about two o'clock P. M. which carried him off in a very short time.

CASE IV.

Mr. *Taylor*, mate of the ship *Charlotte*, was attacked, about nine o'clock in the morning, with the usual symptoms of the malignant fever; was evacuated by means of pills composed of calomel, jalap, and cath. extract, taking at the same time a wine glassful, every hour, of a solution of salts and tartar-emetic, which operated freely. In the evening the fever had not abated in the smallest degree,

degree, although he was in a continual free perspiration the whole day. Continued during the night to take the saline mixture, with the addition of some *sp. vitr. dulc.* 10th. In the morning the fever partly gone off, but complained of great uneasiness at stomach; pain in the right side, eyes, legs, and back; little or no headach; frequent vomiting and purging; what he voided by stool had the appearance of boiled greens beat into a pulp with water, and the smell very offensive. Took, during the day, the saline mixture, and every four hours a pill of calomel, opium, and antimonial powder. In the evening, symptoms much the same, with some appearance of delirium, without, however, any degree of febrile heat, or quickness of pulse. 11th. Had been delirious all night, but was in the morning perfectly collected; no fever; pain of the side much the same; considerable difficulty of breathing; had passed, for the first time since the commencement of his disease, about two ounces of urine, of a pale yellow colour, and perfectly transparent. Ordered to continue the calomel pills alone. Towards evening, began again to be delirious, and continued so the greater part of the night. 12th. Eight o'clock A. M. his breathing more affected than on the preceding day, and exceedingly restless;

less; he said he felt as if about to be suffocated, if he continued for any length of time in one position; the smell from his breath and body remarkably strong and offensive; at noon his mouth began to show signs of being affected by the mercury; the pain in his side was now not so violent; the oppression in breathing much less; could lie in any position for a length of time without much uneasiness. In the evening was spitting freely, and free from every complaint but weakness; passed a good night, and in the course of a week, by the use of wine and nourishing food, was able to do his duty in the ship.

CASE V.

June 10th, 1793. Thomas Smith, a gunner of the royal artillery, was admitted into the hospital with the usual symptoms of the malignant pestilential fever, which had seized him the preceding evening, in a very sudden manner. A solution of salts and tartar-emetic was immediately given; but not having operated well on the 11th, he had a bolus of ten grains of calomel, followed up by a brisk purge of jalap. By means of these the symptoms having considerably abated, he began the use of the Peruvian bark on the 12th. In the evening of that day, however, he was suddenly

denly seized with delirium, and in the night-time, taking advantage of the quiet of the hospital, he stole out, and walked to the barracks, at least a mile distant; in which, the commanding officer, imagining he was intoxicated, had him confined. On being brought back the following morning, he had every appearance of fatuity, low fever, cold clammy sweats, dilated pupils, and staring eyes. With the utmost difficulty the assistants could keep him confined to bed. After having his head shaved, I had a large blister applied to it, and one to the inside of each thigh, and ordered six grains of calomel, without opium, to be given to him every four hours. 14th. Blisters rose well; the calomel gave him several small stools; urine scanty and bloody; a yellow suffusion has begun to appear on his neck and breast; still fatuitous. The blisters to be dressed with blistering ointment, and eighteen grains of calomel, with two of opium, to be given twice in the day. 15th. Much less deranged; yellow suffusion increased; urine very scanty; no appearance of ptyalism. The calomel to be repeated as yesterday; and to have a teaspoonful of sweet spirit of nitre every two hours, till the symptoms of stranguary abate. In the evening, fatuity pretty much gone; mouth a little affected;

ed; pulse remarkably small and quick, but soft; other symptoms as in the morning, only much general prostration of strength. Ordered a large teaspoonful of bark in port wine every hour; to have every third hour a teaspoonful of vitriolic æther in a little cold water; and should his stomach reject the bark, to have it by injection. 16th. Fatuity totally gone; soreness of his mouth much the same; skin warmer, and pulse fuller, and more natural; yellow suffusion less; stomach retentive; has taken seven doses of bark in wine, and thrice of the æther: continue bark, wine, and æther. 17th. Soreness of his mouth much increased; pulse, preceding evening, extremely feeble and small; to-day much as yesterday. Has taken three pints of wine since last night; continued. 18th. Salivation troublesome. July 11th. Discharged.

CASE VI.

June 13th, 1793. Robert Mackay, gunner in the royal artillery, admitted into the hospital with the usual symptoms of the malignant pestilential fever; had a solution of salts and tartar-emetic. 14th. The solution having operated well, took every three hours the following powder; R nitric pulv. ʒj calomel. gr. iij. Camph. gr. iv. 15th. The

The powders occasioned irritability of the stomach, a pill was substituted of five grains of calomel, and a grain and a half of opium. 16th. Notwithstanding the use of the pills, which agreed well with him, the more untoward symptoms, coma, low delirium at times, cold clammy sweats came on so rapidly, as to induce me to discontinue the calomel all this day and the following, and to give bark and wine. These, however, had no effect; his state seemed desperate; and perceiving, with the symptoms mentioned, the dilatation of the pupils, I had again recourse to the calomel on the 18th; and ordered blisters to the thighs and stomach. During all this day he took twenty grains without effect; nor were the blisters of the smallest use, although they rose remarkably well. 19th. In the same state; if any change, it is for the worse. Ordered eight grains of calomel every three hours, and should it purge, thirty drops of laudanum to be given from time to time, till the purging ceases. Bark and wine, at the same time, to be given as liberally as possible. In the evening, matters becoming worse, ordered sixteen grains of calomel at a dose. The quantity, including this to-day, forty grains. 20th. The same; fifty grains of calomel to be given at three times, with opium.

21st.

21st. In addition to the calomel, I now ordered as much spiced port wine, and bark and port wine, to be given to him, as he could possibly take. 22d. Still the same; took fifty-four grains of calomel, and four pints of spiced wine yesterday. 23d. As he still continued in the same state, and as a black fur had formed on his teeth, gums, and tongue, I was afraid to push the calomel any further. He had already taken 254 grains without its purging him, and without shewing any disposition to act on the salivary glands. I therefore now left him to nature, only endeavouring to assist her by the plentiful use of spiced wine. In this state he continued till about noon of the 24th, when a gentle spitting came on, which, however, disappeared about midnight. With a view to encourage the salivation, I had his head well wrapped in flannel; and his neck and jaws frequently anointed with warm camphorated oil; and he still continued the bark and spiced wine. By means of these, a gentle salivation was again brought on, and continued till the 3d of July, when carbuncles broke out all over his body, particularly in the most fleshy parts; some of these were as large as a small pullet's egg; but in general they were of the size of a pigeon's egg. Those of them which opened naturally

naturally were dressed with digestive ointment, and the others had an apoltice applied to them. From this time he continued to recover; but it was not till the 2d of August he could be discharged.

CASE VII.

June 9th, 1793. John Chevers, a gunner of the royal artillery, of a weakly constitution, and a taylor by trade, was admitted into the hospital for the malignant pestilential fever, after the inflammatory stage had passed: he still, however, complained of violent pain in the right side. For this he had a blister applied; the nitrous powders with calomel; and now and then, bark and port wine, if his stomach could bear them. 11th, His stomach rejected all these; and the putrescent stage came on with most of the worst symptoms, particularly coma and cold clammy sweats, with deadly coldness of the surface. Irritability of the stomach disabled him from taking any of the medicines hitherto used in this disease; I therefore directed twenty drops of æther to be given to him four times in the day, in a little cold water. 12th. The same; the æther to be doubled; and if his stomach can receive them, to have nourishing food and wine. He continued the æther alone

alone all the 13th, 14th, and 15th, when the dangerous symptoms disappeared: his stomach became retentive, and on the 5th of July he was discharged.

CASE VIII.

A Swiss, of the name of *Michelle*, was seized with the symptoms of the malignant pestilential fever on the 21st of May, 1793. After much evacuation, with irritability of stomach, coming early on, rendered difficult, he took twenty grains of calomel daily, till the 1st of June, before his mouth became affected by it. Every disagreeable symptom had already taken place, such as yellow suffusion, a tendency to coma, delirium, much despondency during his rational moments, &c. For three days the bad symptoms appeared to increase; all pain, however, except some oppression at the præcordia, ceased; and his stomach became so retentive as to admit the exhibition of sago and wine. Bark produced a burning sensation in the stomach, as indeed the wine did in a less degree, and of course he could not retain it. Always, on attempting to take this medicine, he threw up a considerable quantity of a slimy matter of an intolerably offensive smell, and whitish colour, the discharge of which seemed to

relieve him. On the 4th June, he appeared relieved in every respect, except the oppression, which still continued. On the 6th, this oppression seemed to change into a sense of foreboding or rawness from the stomach to the mouth, attended with nausea, and sometimes vomiting of green bile. The bile thus discharged, on being exposed in a basin to the air, became of a pale yellow colour. To remove this distressing symptom, a large blister was applied to the pit of the stomach, and a few laxative pills were given to carry off the acrid accumulation. 7th. In the same state, notwithstanding the rising of the blister, and copious stools. 8th. To remove it, twelve drops of æther, in cold water, were given thrice in the day. This medicine gave a momentary tone to the stomach; and produced a sense of ease and freedom from oppression which had not been felt for several days before. 9th. The favourable change induced me to return to the exhibition of bark, chiefly, however, by injection. It excited irritability of stomach, and considerable febrile heat. I therefore again desisted, and repeated the æther, and the same pleasing effect was the consequence. 10th, and 11th. Sensible of the good effect of the æther, he had recourse to it himself repeatedly, and the event was extremely favourable; for,

for, on the 13th, his looks were infinitely better, his skin began to acquire its natural colour, his appetite began to return, the oppression and burning sensation at the stomach, and along the course of the œsophagus, were gone; and, in short, from being almost in a moribund state, he was a convalescent. An imperfect salivation appeared about the beginning of the month, and never increased much. This person was the principal servant of Messrs. Thornton, Baillie, and Campbell, of St. George's.

CASE IX.

July 12th, 1793. John Gibson, a gunner of the royal artillery, lately arrived from Europe, was admitted into the hospital, labouring under all the symptoms of the malignant pestilential fever, in a very violent degree. Had a solution of salts and tartar-emetic. 13th. The solution having operated well, he immediately began the use of the calomel. 14th. Much as yesterday, only lower; and the calomel seems inclined to affect his bowels. Ordered a grain of opium every two hours, should the purging increase, and to have, in the course of the day, an ounce and an half of bark. 15th. Slight soreness of the mouth, pains, &c. relieved; but coldness of the surface, and

some degree of clamminefs have come on. Continue the medicines. 16th. Much inclined to coma ; ptyalifm very moderate. Ordered to have two ounces of bark, mixed in a bottle of port wine, in the courfe of the day. 17th. The purging returned, and more frequent than before ; ptyalifm much abated ; much irritability of the ftomach ; coma, and a tendency to delirium ; clamminefs and coldnefs of the furface. Ordered two grains of opium every two hours, till the purging ceafes. The bark and wine as yesterday ; and æther, from time to time, till the ftomach becomes retentive. 18th. The purging ceafed after taking a few pills of opium ; ptyalifm increafed ; but the ftomach ftill irritable. Continue bark, wine, and æther. 19th. Much better. Ordered to continue the bark and wine, and to have a fmall bafon of fago frequently. From this time he continued to recover ; and was, on the 2d Auguft, difcharged.

CASE X.

Duncan Rofs, a bombardier in the royal artillery, aged about thirty-feven, of a remarkably robust perfon, and ftong constitution, was feized with all the ufual fymptoms of the malignant peftilential fever, on the 22d of July, but was
not

not reported till the 25th, when he was admitted into the hospital. Complained of most violent pain in the forehead, back, calves of the legs, and right side, with very full and quick pulse, ardent heat of the surface, staring inflamed eyes, and considerable irritability of the stomach. Before his admission he had taken some salts without my knowledge. He immediately began to take calomel; of which, in the course of the 25th, he took twenty grains, with a proportional quantity of opium and James's powder. In the evening the symptoms were so unfavourable, that I judged it necessary to administer bark injections every third hour. 26th. Much the same; ordered the medicines as yesterday. 27th. Irritability of the stomach much increased. Continues the medicines as before, and ordered a tea-spoonful of æther in water, from time to time, till the vomiting abates. 28th, and 29th. The same; no appearance of ptyalism, although he had taken 130 grains of calomel. 30th. Became comatose; frequently delirious: and made violent exertions to get out of bed. His skin, which had acquired on the 28th, the livid disagreeable colour constantly observed in the bad cases of the fever, became now, in several places, of a much darker hue; vibices began to appear about the

neck; a hæmorrhage, amounting to a quart, came on last night; has still frequent large discharges from the nose; irritability of stomach so great as to resist every means I could devise to allay it, particularly large quantities of æther. I now gave up every thought of pushing the mercury farther, and depended solely on the bark injections, which were repeated every two hours. 31st. The same; lost two quarts of blood last night; vibices increasing; continue. August 1st. Hæmorrhage still continues; had discharge by stool a very considerable quantity; from the nose also; and the blood had now become so extremely putrid and offensive, as to keep the nurse and assistants at a considerable distance from the patient. Died early this morning.

CASE XI.

James Knowles, a recruit of the royal artillery, young, spare made, but of a florid complexion, and strong constitution, was admitted into the hospital the 25th of July, on which day the malignant pestilential fever seized him. It came on with strong convulsions, which were succeeded by the usual symptoms in the most violent degree. On his admission he had the solution of salts and tartar-emetic, which, operating well, he

he took, on the morning of the 26th, a pill of five grains of calomel, and one and an half of opium; the calomel was repeated every three hours; and, as there was much irritability of stomach, a large blister was applied to the epigastric region. 27th. Tendency to coma and delirium; most ardent heat and dry skin; of a colour much inclining to livid; the quantity of calomel doubled; and, as what he had already taken had purged him, ordered a grain of opium every three or four hours to check it. 28th. Continual vomiting, coma, and delirium; the latter more violent than usual, attended with continual sobbing, sighing, and shedding of tears. Former scenes were continually presented to his imagination; and, as if in the midst of his domestic friends, he related the circumstances, but with much incoherency. It was remarkable that, although all these were related in a most desultory unconnected manner, and with a total forgetfulness of the place or situation he then was in, they excited piercing lamentations, and a profuse discharge of tears; and, if for a moment he happened to recollect himself, he bitterly accused himself of folly, in a disposition strangely composed of gaiety, or seeming gaiety, and the deepest melancholy. During this dreadful scene, which

I was, unfortunately, a witness to, he frequently made violent attempts to get out of bed; and on being prevented by the assistants, he upbraided them for their cruelty, in the names of his friends or former companions. Towards evening he had several convulsive fits, in one of which he expired, completing exactly seventy-two hours.

CASE XII.

September 9th, 1793, Thomas Smith, a second gunner in the royal artillery, was admitted into the hospital, labouring under the usual symptoms of the prevailing epidemic in the second degree of violence; had the solution of salts and tartar-emetic, which operating well, was followed up on the 10th with the saline draughts, and a proportion of sp. nitri dulc.; the symptoms, however, not yielding to this, he began in the evening the use of calomel. R. Calomel gr. v. pulv. Jacob. gr. ij. Opii gr. 1 pt. pilula tertia quaque h. f. Together with these, on the 11th he took 20 grains of Angustura bark every hour, mixed with water. 12th. The symptoms, particularly the pains, having abated, the pills were discontinued; but he took every hour the Angustura bark, as before. 13th. Worse. Two of the pills to be taken thrice in the day; the Angustura bark

bark as yesterday ; and if he has no stool before noon, a laxative injection is to be administered. 15th. The same. Eighteen grains of calomel and two of opium thrice in the day ; 2 oz. of Ang. bark during the day ; an injection as yesterday, and spiced wine from time to time. 16th. Had 76 grains of calomel since yesterday morning ; the last 20 without opium ; in consequence of which, he had two stools. Thinks his mouth is rather sore ; turbid brown urine ; brown parched tongue, and black furred teeth and fauces. Deep yellow suffusion since the afternoon of the 14th, interspersed with petechial spots, and vibices on the neck ; perfectly collected. A blister that was applied to the head, and one to the inside of each thigh, in the evening of yesterday, rose well ; but during the night delirious at times ; at present coma and clamminess of surface, although pulse 100, and pretty full, with some degree of hardness. Took very little bark yesterday. Ordered to have immediately twenty grains of calomel with opium. At noon the same quantity to be repeated ; and if a purging should come on, to check it with a grain of opium from time to time. The Angustura bark as yesterday. In the evening still comatose ; at no times delirious ; had forty grains
of

of calomel, which having brought on a purging, two grains of opium were given every two hours to check it; which had that effect after six were taken. In every respect as in the morning. Urine turbid; no calomel; but injections composed of two oz. of Peruvian bark, with a sufficiency of port wine to render it fluid, and two teaspoonfuls of laudanum to be administered every two hours. 17th. In the course of the night sometimes delirious; calm and collected at present, but coma and clamminess of the surface still continue. Yellow suffusion of a deeper hue; and the serous discharge from the blisters, as well as the urine, of the same colour. Had five injections since the evening of yesterday, each composed as directed; urine turbid, but has deposited a small sediment of a granulous texture, and whitish colour. Ordered the bark injections, the Ang. bark, and spiced wine. In the evening, had five injections since morning, three of which were immediately passed; his stomach, however, remarkably retentive, and has taken more than an ounce of Ang. bark. In the afternoon the delirium increased very much; and at that time he made several violent exertions to get out of bed, and was so affected at the resistance made to them, that he called out murder, and expressed otherwise

otherwise great perturbation of mind. He appears, however, at present calm, and as collected as in the morning. Remarkably deaf, which he is himself sensible of. In the course of the day, marks of subfultus tendinum, which have now disappeared; pulse 112; warm moisture on the surface, without clamminess; comatose; lies chiefly on his back with his eyes open. Ordered the injections, with a double quantity of laudanum, and a larger quantity of the Angustura bark. 18th. Had only three injections in the course of the night, and they were administered with considerable difficulty, owing to his prejudice against them; stomach very retentive, has taken two ounces of Ang. bark since last night. Having a strong inclination for rum and water, he was deceived by being told the dose of Ang. bark was grog. In the night time made only one attempt to get out of bed; and had much less delirium than usual. Still comatose however; on being called to seems perfectly sensible of his situation; no pain; no subfultus tendinum; and surface warm, and covered with warm moisture; deafness continues; pulse 104; ordered to have, from time to time, a little rum and water. Continue—Evening, when offered the rum and water, though only a wine-glassful,

ful, he expressed his satisfaction by saying, " it is glorious." 19th. Had only two injections during the night ; has taken more than an ounce of Aug. bark : no delirium, but comatose. Some appearance of the hippocratic countenance ; thick black fur on his tongue, which impedes his speech much ; moisture, heat, &c. as last night ; sleep more natural, and lies on his side, which he has not done hitherto ; urine very turbid and of a brownish colour, inclining to green, without any deposition of sediment ; pulse 104 : Having ordered equal parts of Peruvian and Angustura bark to be given by the mouth, instead of the latter alone, two doses were given ; but owing to the taste of the former, which he was instantly sensible of, or to the peculiar dislike always manifested in this fever to it, he vomited them up immediately ; eat a good deal of beef soup, and some meat, both of which he called for—Continue. 20th. Symptoms as yesterday, slept a little, pulse 96 ; urine very turbid, and of a deep brown or porter colour, with several clouds of the same colour floating near the bottom of the glass. Stools not foetid—Continue. 21st. Since yesterday morning, had six bark injections, and two ounces of Ang. bark ; and last night took some oatmeal gruel and wine ; pulse 108. In
the

the evening much more sensible than he has been at any time since the commencement of the fever. Tongue free of black fur, but still dry; fur on the teeth and fauces gone also. Continue. 22d. Much as yesterday, only pulse 112. Continue. 23d. Countenance rather more clear, and eyes less dull and heavy; tongue still brownish, and to-day cracked, with, near its extremity, something like brownish coloured pus; pulse 110. Continue. 24th. Rather more of the cadaverous smell to-day than usual; other symptoms nearly as before. Pulse however seems to quicken, and at the same time to diminish in strength and fulness; to-day it is remarkably feeble, almost thready, and 114 in a minute. Had no injections last night, as he took the Peruvian bark and wine by the mouth. Continue. 25th. Pulse 108, and more feeble and thready than yesterday; perfectly sensible, but debility increased to an extreme degree. Took in the course of the night almost a bottle of wine, and two ounces of Peruvian bark. In the evening, having continued to take the Peruvian bark and wine very liberally during the day, for the first time complained of ptyalitic symptoms. On offering him some soup, immediately complained of its occasioning a most unusual heat and pain throughout

throughout the whole of his mouth and throat ; and even rum and water, which hitherto he preferred to any thing else, he refused, not from dislike, but from the pain the swallowing it brought on. More sensible than ever. Continue. 26th. Lower to-day than usual, although he took in the course of the night a bottle of wine and two ounces of bark ; pulse much more feeble and thready, and evidently tremulous, 112 in a minute. Soreness continues, but nothing like spitting. Continue. 27th. Pulse 120, feeble and tremulous ; tongue, for the first time, clean and moist ; urine less turbid, and more of the colour of fined porter ; and has precipitated a considerable sediment of a yellowish colour. Soreness rather increased ; takes much nourishment, and a large quantity of wine and bark. Continue. 28th. Pulse remarkably indistinct, and so small as scarcely to be felt ; it appears to be about 96 ; otherwise much as yesterday. Continue. 29th. Pulse 116 ; more distinct than yesterday ; feeble but not thready ; skin at length soft and agreeably cool ; has now in a great measure recovered his natural tone of voice, which has hitherto been low, shrill, and drawling ; appetite increased much. Soreness of his mouth much as on the 27th, with now a very moderate spitting.

spitting. Continue. 30th. Pulse 116 perfectly distinct, but still rather weak and small; soft skin, otherwise as before. Continue. October 2d. Pulse 112; good appetite; clear skin and eyes; tongue moist. 3d. Pulse 100. Continues to recover. Complains much of his mouth. No bark; but continue wine and nourishment. From this time he continued recovering till November 2d. when he had acquired so much strength as to be able to quit the hospital, and do his duty.

Many other cases similar to these might be added; but, as they contain only a repetition of the same circumstances, their insertion would be unnecessarily occupying the attention of the reader. The Angustura bark being, however, a new medicine, and the exhibition of it in malignant fevers having been hitherto, I believe, unattempted, I shall add a few cases of the malignant pestilential fever, in which it was the sole or the principal medicine used, after the operation of the usual evacuates.

CASE XIII.

Joshua Smith, a gunner in the royal artillery, just arrived from England, a man of a strong constitution, aged 27, was admitted on the 23d
of

of July into the Royal Artillery Hospital, for a dysentery ; the symptoms of which rather unexpectedly disappearing, he was seized on the 27th with the usual symptoms of the prevailing epidemic. A vomit of tartar emetic was immediately given, and followed up with saline draughts, charged with sp. n. dulc. 28th. Much the same. Continue the draughts every hour till cooler, when he is to have bark and wine. 29th. Symptoms increasing ; the scrotum particularly affected ; and, on examination, found the testicles drawn up towards the abdominal ring, and the penis contracted and distorted. Ordered a pill of five grains of calomel, two of James's powder, and one of opium, every third hour. 30th. The pills having occasioned irritability of stomach and purging, were discontinued ; and bark and wine, in as large quantity as possible, substituted in their room. 31st. The symptoms continue, with the addition of coma, and occasional delirium, with clammy sweats. The medicines hitherto used, having disagreed with him, particularly the pills and wine, I now ordered the bark to be given in the following form, as frequently as possible. R. pulv. cort. Peruv. ℥j. flor sulph. ʒi. aq. cinnamon, sp. ʒiv. simp. ʒx. ℥b. and every two hours a pill of
three

three grains of camphor. In the evening, however, the irritability of stomach so much increased, as in some measure to preclude the use of these medicines. I therefore directed a bark injection made with tepid water, to be administered every third hour, till the stomach became retentive. August 1st. Irritability lessened, and able to take the above medicines. 2d. Very low, irritability has again returned ; much low delirium ; scrotum ulcerated and discharging a most foetid ichor. The bark injections to be renewed, and the other medicines to be taken occasionally. 3d. In the same state. Removed into another ward. Continue the injections. 4th. Much lower and frequently insensible ; at other times made violent exertions to get out of bed ; very delirious. What had hitherto been done, having produced no effect, I determined to-day on giving him the Angustura bark, without much expectation of his deriving benefit from it, but to satisfy myself that nothing had been left untried. He accordingly took twenty grains in water every two hours. 5th. Urine clear, and of the colour of brandy, without any sediment or cloud ; great thirst ; parched tongue and fauces, and of a brownish colour. Continue the Angustura bark. 6th, 7th, 8th. The same. Has uniformly

retained the Angustura bark. 9th. Urine very turbid, and whitish sediment. Continue. 10th, 11th. Free of coma; no delirium; skin agreeably cool and moist; tongue moist; no thirst. September 6th. Discharged.

CASE XIV.

Henry M'Keudry, a gunner in the royal artillery, a young man of a florid complexion, and small stature, was seized with the symptoms of the pestilential fever, on the morning of the 7th of August; had lately arrived from Europe, and been once troubled with slight symptoms of dysentery since his arrival; had taken a vomit of ipecachuanha and tartar-emetic, immediately after the fever appeared; and after its operation, began the use of the Angustura bark. The discharge from the stomach consisted of at least two quarts of puracious bile, which emitted a most offensive smell; the vomit also operated by stool several times, which discharge was also very foetid. Before the morning of the 8th he took fully an ounce of the Angustura bark, at which time most of the symptoms had disappeared, particularly the headach and nausea. On the 8th and following night, he took two ounces of the bark; and on the 9th felt himself considerably better.

better. His urine on this day was of a deep brandy-colour, and precipitated a considerable quantity of whitish sediment. He continued the use of the Angustura bark till the 13th, when appetite and other signs of returning health were so evident as to render the further administration of medicines unnecessary. In a very short time after he was perfectly recovered.

CASE XV.

Robert Mill, a bombardier of the royal artillery, was on the 14th of August seized with pain in the forehead, sinciput, and temples, with the other usual symptoms of the prevailing epidemic, which in the evening encreased to an alarming height; cold sweats, irritability of stomach, and tendency to coma, with the staring prominent eye. For these he took in the afternoon an emetic of ipecachuanha and the antimonial; and late in the evening he began to take the Angustura bark. 15th. General symptoms considerably abated; irritability of stomach almost gone; took upwards of two ounces in the course of the night and morning, of the Angustura bark. Continue the Angustura bark, with occasionally a small addition of thebaic tincture. 16th. Complaints almost gone; urine very dark-

coloured, almost similar to a strong infusion of tobacco, and turbid, with a considerable deposition of whitish sediment in small cakes. 17th, 18th. Continuing better, and return of appetite.

CASE XVI.

Stewart Anderson, a young man of a slender make and rather feeble constitution, lately arrived from Europe. For some days has been attending his master, Lieutenant O'Brien, of the royal artillery, in the malignant pestilential fever. His master was taken ill on the 9th of June, and was in a convalescent state on the 24th, on which day Anderson was suddenly seized with all the symptoms of the fever ; but by no means in any uncommon degree of violence. Ardent heat, quick, but not full pulse, violent headach, pain in the back and legs. The tongue remarkably tremulous, though not foul ; considerable thirst ; a general gentle tremor of the muscular fibres. He immediately began the solution of salts and tartar-emetic, which operated well as an emetic and purge ; and threw out a most profuse diaphoresis. As the symptoms were far from indicating any marked violence of disease, I without hesitation, soon after the appearance of sweat, began him with the Peruvian bark. He began
to

to take it about 8 P. M. and continued it all night. 25th. Seemingly better ; the sweat had continued moderately ; his stomach remarkably retentive, and the pains gone. He continued the use of the bark till about 7 P. M. by which time he took fully three ounces, with occasionally a good deal of port wine. At 7 P. M. the servant who administered the bark, went to him for that purpose ; but Anderson observing it was not as yet time, she left him ; but on returning in less than fifteen minutes, found him dead. The appearances on the dissection of the body have been already given.

CASE XVII.

Lieutenant Watkins, of the royal artillery, a young gentleman of a strong robust make and constitution, aged 25, on the evening of the 29th of August, a few days after his arrival on the island, was seized with all the usual symptoms of the malignant pestilential fever, in the more violent degree. [This gentleman had heard before his arrival of the dreadful devastation committed by this disease ; and knew that three officers, who had some time before crossed the Atlantic in the same ship with him, had fallen sacrifices to it in the very house in which he was

then quartered. These circumstances had impressed him with a just dread of the evil he had much reason to expect, and no doubt added very considerably to the natural violence of the symptoms. After being well evacuated by a vomit of ipecachuanha and tartar-emetic, and a solution of salts and tartar-emetic, and a profuse diaphoresis having broke out by noon of the 30th, he began the Angustura bark in doses of a scruple, repeated every hour. The two first he retained; but afterwards, the instant the bark reached the stomach, it was rejected. During the remainder of this day, all the 31st and the greater part of the 2d of September, the irritability continued. Neither medicine nor nourishment could be retained; his skin became dry, his tongue and fauces parched, the former of a brownish colour; a weakening discharge by stool came on, of a most foetid smell and blackish colour. I gave him calomel joined to solid opium all the 31st; but this passing off by stool, increased the general weakness, without a possibility of its acting on the salivary glands. He now again tried the Angustura bark, but in vain; but as nothing else could be at all effectual in stopping the progress of the disease, I determined on persevering in it, in hopes of its being at length wholly

wholly retained, or at least such a portion of it as might be sufficient to prevent gangrene. In the night time he himself proposed, that this bark should be mixed in some strong wine or spirit, which might prevent its rejection. Captain D'Arcy, of the same corps, who carefully attended him, luckily recollected that he had by him some infusion of Peruvian bark in port-wine, that had been made upwards of a month before ; and of this he gave Mr. Watkins half a wine glassful, and repeated it at the end of two hours. Its effect was astonishing ; for, when at the expiration of two hours more, a dose of Angustura bark in water with ten drops of laudanum, was given, he swallowed it without disgust, and kept it. From this time he continued the Angustura bark with the laudanum, and retaining it, was, when I saw him on the 2d, at noon, by which time he had taken and retained twelve doses, totally free from fever ; easy in every respect ; his skin agreeably cool, with a general warm moisture on it ; the staring prominence and redness of his eyes had almost entirely disappeared. In short, he seemed now to be in a fair way of recovery, although the preceding day I had formed the most unfavourable prognostic of his situation ; but alas ! how flat-

tering was all this ! On visiting him on the 3d, I found a change had taken place in the night ; he suddenly became delirious, the protrusion and staring of his eyes returned, every muscle was affected with tremour ; but his skin continued cool, and his stomach still retained the Angustura bark. When I saw him he was nearly in this state, only the coolness of the skin was attended with a clammy moisture. Together with the bark which he took and retained remarkably well, I ordered a large blister to be applied between the shoulders, chiefly with a view to overcome, if possible, the general spasm.

4th. During the night the delirium increased much, and alternated with coma ; the muscular spasm was much more violent ; the surface of the body was cold and clammy ; and some vibices appeared on the neck. The blister rose remarkably well, and his stomach continued remarkably retentive ; this was his state, with the addition of insensibility, when I saw him near noon. A curious circumstance (observed by the attendants frequently, and by myself once), was the rapid change and alternate succession of colour of the skin, from very pale to dingy or livid, or to bright yellow : these succeeded each other in the space of a few minutes ;

at

at the end of which, his skin became of the usual dirty, livid hue, peculiar to the complaint. An hour after the alternate succession would come on again ; and after continuing the same length of time, would be succeeded by the livid colour, and so on. About four in the afternoon, a violent convulsion came on, and continued a few minutes ; his respiration became now extremely oppressed, and he frequently, as if by a natural impulse, laid his hand across the pit of the stomach ; the muscular spasm now increased so much as to shake the bed with much violence. About six o'clock, another violent convulsion carried him off. During the two last days he took upwards of three ounces of the Angustura bark, and fully three bottles of port-wine, with a good deal of nourishment, which indeed he generally had a craving for.

APPENDIX, No. II.

Cases of Simple and Yellow Remittent Fever, treated with Mercury, with Nitrous Acid and Oxygenated Muriate of Potash, or with Mercury and the oxygenated Medicines in succession, combination or alternation, at Fort Royal, Martinico, in 1798.

CASE I.

William Seibletz, foreign artillery, aged twenty-one, black complexion, black hair, admitted 13th April, 1798. Suddenly, this morning upon guard, fell down in a state of total insensibility, in which state carried to the hospital. No cause can be assigned. A short time after admission insensible, and lying in a comatous state, except when attempts are made to move him, when he seems violently outrageous. Pulse indistinct; skin very warm. On being bled to the extent of twenty ounces, pulse instantly rose; blisters applied to the head and thighs, and stimulating clysters administered. 14th. Pulse softer, but still

still indistinct; insensibility continues; light particularly offensive; took in the course of the day eighty grains of calomel; and in the evening more sensible. But, 15th, during the night, wildly delirious, and so highly outrageous, obliged to be confined. A powder of fifteen grains calomel, ten grains camphor, and three grains James's powder, to be given every fourth hour; and blisters to be again applied. Pulse 130. Delirium still constant; tongue whitish, 16th. Has now intervals of sensibility; belly open; skin cool; the calomel to be continued in doses of ten grains. In the evening, pulse 92; skin cool, and perfectly collected. Complains of pains across the forehead; tongue covered with a thick white crust; eyes much inflamed. 17th. During the night violently delirious; but towards morning slept, and afterwards composed. Pulse 108; soft moist skin; tongue dry and brown in the middle; moist towards the edges. Continue calomel. 18th. Pulse 108; tongue now moist; had much sleep; is perfectly sensible, and has sat up a little; tongue begins to separate the crust. 19th. Mouth affected with the mercurial action; rested well, and perceives a return of appetite. After this continued to recover.

CASE II.

John Richardson, serjeant-major, royal artillery; fair complexion, red hair, very robust, aged thirty. Admitted July 4th, 1798. Felt uneasy on the night of the 1st, inst. pain in his loins, across the eyes, and generally through the head, although more fixed across the forehead, with some increase of heat. The headach increased towards morning, and continued most of the 2d, till evening, when he had a remission of his symptoms. Took that day some James's powder and calomel, which purged him briskly, had a return of headach, with some griping, the morning of the 3d; had thirty grains of calomel, with two of opium, in the course of the day. 4th. Passed an easy night; in the morning had a violent return of headach, vomiting, pain in the loins; always, on moving, stomach irritable. Had pills composed of jalap and calomel; a blister to the region of the stomach, and ordered the occasional use of æther. 5th. Notwithstanding the use of these remedies, vomiting alarmingly increased, with discharge black and ropy. Pulse 106: skin cold, and covered with cold clammy sweat; no inflammation or redness of the eyes; and no particular pain complained of; lies constantly

stantly on his back ; but perfectly collected ; vomiting incessant, and discharge black and like coffee grounds. Took sixty grains of calomel in the course of yesterday, without any evident effect whatever : ten grains every two hours ; æther to be persevered in ; a blister to the inside of each thigh ; and the blistered parts to be dressed with mercurial ointment. In the evening, no change ; mercurial pills have increased the irritability of stomach ; and now alternate suffusions of yellowness and dinginess overspread the surface ; they suddenly appear and suddenly disappear. Pulse 116 ; continue calomel. 6th. Pulse 110 and feeble ; vomiting continues ; a variety of remedies have been employed to check it without effect. It being impossible, under the existing circumstances, to throw in a sufficiency of calomel, it was now determined to administer mercurial ointment by clyster, and make use of strong pressure to prevent its immediate rejection. A clyster as follows was accordingly injected : R. ung. mer. fort. ʒi. Calomel ʒij. Tinct. opii. ʒij. Mucilag. q. s. Aq. tepid. ℥ss. m. Finding the composition of this very troublesome, a second clyster was administered, increasing the calomel to half an ounce, and leaving out the ointment altogether. To be repeated every fourth hour ; and the blisters

ters to be dressed with mercurial ointment. 7th. Pulse 88, fuller and stronger. After the third clyster vomiting ceased, and returned only once during the night. Had much tranquil sleep, which has relieved him much; and this morning is more lively, and without despondence. His mouth moderately affected, and a gentle spitting come on. Had a laxative clyster. In the evening vomiting once or twice returned, but by no means violent; hiccup very troublesome. Pulse 88. The following clyster ordered: R. asafoetid. $\mathfrak{z}$ s. solve in aq. bullient. $\mathfrak{t}\mathfrak{b}\mathfrak{s}$. et add. mur. sodæ $\mathfrak{z}\mathfrak{i}\mathfrak{j}$. Ol Ricin. $\mathfrak{z}\mathfrak{i}\mathfrak{j}$. m. f. enem. A repetition of this, with a little magnesia taken into the stomach, removed the vomiting and hiccup. 8th. Salivation increasing, with considerable discharge of blood from the gums. Taken some boiled milk and bread. Has no inclination for wine or porter. 9th. Much bloody spitting; continues better. Takes some bark on account of considerable debility; arising partly from the discharge of blood from the mouth, which has been very considerable. 12th. Much better. Some time after discharged.

CASE III.

John Wilson, aged twenty-one, dark complexion. December 6th. About five last evening was attacked, after a slight shivering and headach, with pains in the loins, thighs, and calves of the legs, succeeded by a hot fit which lasted several hours, when plentiful sweating succeeded. Pulse 104, sunk; tongue covered with a whitish fur, but moist; skin natural; thirst; belly rather bound. R. calomel. $\mathfrak{z}$ ss. pulv. jalap. $\mathfrak{v}$ i. m. f. bol. iv. un. sumend. 3^{tia}. q. q. h. In the evening, pulse 116, headach much relieved by cold applications to it; much purged by the boluses; thirst, &c. as before; vomiting. To have ten grains of calomel, and one of opium every four hours. 7th. Symptoms relieved. Pulse 104; urine high coloured, and less in quantity than naturally; continue calomel. 8th. Pulse 104; headach still continues; he describes it as a dull heavy pain passing round the coronal to the commencement of the lambdoidal futures; otherwise still as before. A blister between the shoulders, and continue the calomel; belly open. In the evening, pulse low and sunk; much delirium; skin cold and clammy; tongue moist and brownish; thirst. Continue the calomel, with the addition of camphor and antimonial

nial powder; blisters to the head and thighs, 9th. During the night, restless and delirious; sweated towards morning, which was succeeded with remission of the symptoms. Pulse 96, and rather fuller; skin warmer; tongue moist; and is quite sensible. The surgeon discontinued the mercurial, and substituted Angustura bark. 10th, Apparently relieved, and ordered Peruvian bark, a drachm every two hours. But about one P. M. became suddenly comatous and insensible. Pulse remarkably sunk; respiration extremely laborious; and at two P. M. died. On dissection, dark coloured blood flowed abundantly on opening the cranium; the membranes of the brain much inflamed; much serous fluid in the ventricles: much fluid in the pericardium; lungs found; stomach diminished in size, and the interior coat abraded, but empty; liver of the usual size, but of a cineritious colour; gall-bladder turgid with excessively viscid black bile; spleen enlarged, not otherwise diseased; on the interior surface of the intestines some purulent matter, but whence it came could not be traced.

CASE IV.

Soluble mercury. *Thomas Philips*, aged twenty-four, black complexion, admitted May 16th, was
 attacked

attacked yesterday morning with violent headach,
 sickness at stomach, vomiting, faintness, pains in
 the loins and calves of the legs and thighs, without
 any preceding cold fit; tongue moist, with white
 crust. Pulse 92; skin hot. Ordered jalap gr. x.
 cal. gr. v. every third hour. His head to be
 shaved, and cloths soaked in a solution of muri-
 ated ammonia to be kept applied; the same ap-
 plication to the stomach; clysters of cold water:
 a blister to the neck; and frictions of mercurial
 ointment to the inside of the thighs. In the even-
 ing, pulse 100; otherwise as before; having
 been purged, one-half grain of soluble mercury
 ordered every four hours. 17th. Pulse 96; head-
 ach abated; stranguary and tenesmus otherwise
 continue the soluble mercury. 18th. Pulse 82;
 rested well; body open; headach relieved; eyes
 less inflamed; during the night was slightly de-
 lirious, and had no sleep. 19th. Much the same.
 20th. Considerable flux of blood from the gums
 came on suddenly in the night; neither the
 tongue, gums, nor salivary glands, affected with
 mercurial action; costive; some chrystals of tar-
 tar to be taken. 21st. The hæmorrhage from
 the gums continues. Pulse 88. Towards even-
 ing pulse rose to 120; was delirious part of the
 succeeding night. The bleeding greatly in-
 creased,

creased, and he evidently sinks under it; very delirious; styptic gargles; wine, bark, and cordials used without effect. 22d. Gradually sinks under the hæmorrhage, which cannot be checked; insensible. Expired about nine P. M.

CASE V.

Richard Wormsley, aged twenty, dark complexion and hair. After labouring under symptoms of dysentery for about a fortnight, for which no remedy had been administered, he was admitted into the hospital on the 5th of May, when these symptoms had been superseded by those of the yellow remittent fever. The compound powder of ipecachuanha, and the sp. minderer, were given by the first person who saw him. Pulse 108. 6th, and 7th. Apparently relieved; and body very open by means of a purgative apozem. 8th. In the afternoon taken suddenly with violent vomiting; thirst; tongue parched; passes much blood in his stools. Pulse 100. Ordered six grains of calomel, and five of James's powder, every fourth hour. 9th. Pulse 96; forepart of the tongue dry and red; back part covered with foul whitish crust; stranguary; skin dry and hot, but no headach. In the evening pulse 110, and sunk; tongue parched; considerable difficulty in breathing,

breathing, and pain at the scrobiculus cordis. Six grains of the oxygenated muriate of potash ordered every four hours. 10th. Pulse 100, and fuller than last night; tongue somewhat moister round the edges, but complains of constant griping and purging, to relieve which, a laxative injection was administered. The oxygenated muriate continued. In the evening a yellowness began to appear in the adnata of the eyes; and petechiæ on his arms, face, and neck; tongue and skin moist; urine high coloured; no pain; considerable thirst. Pulse 112; the muriate continued, and the laxative injection repeated. 11th. Pulse 96; had some sleep during the night; tongue moist, and belly free from griping, and regular. The gentleman who attended him thought it now necessary to exhibit the bark. At eight A. M. pulse 112; skin moist and of the natural heat; but tongue drier, and of a florid red towards the tip. A yellow suffusion has taken place very generally; the gums have bled a little; and complains of disagreeable taste in his mouth; pain and oppression at the scrob. cord.; gone, and respiration easy; sighs frequently. At eight P. M. pulse 112; skin has a natural warmth; pulse much fuller and more distinct; has slept much since morning; tongue florid but dry; little

thirst and belly open. Continue bark. 12th. An unpleasant change, violent heat; tongue rosy and dry; much thirst; frequent vomiting; no sleep; urine deep yellow, but discharged freely; petechiæ increased; omit bark; ordered eight grains oxygenated muriate of potash, and a quarter of a grain soluble mercury, every four hours. 13th. Pulse 100, full and soft; petechia disappearing; stomach perfectly retentive; frequent purging without griping; tongue slightly white; makes urine frequently; yellowness deeper. Continue oxygenated muriate of potash, and merc. solub. In the evening, the purging troublesome; a few drops theb. tincture. Continue medicines; and ordered the use of the cold bath. 14th. Pulse 102; rested well; skin moist; thinks himself generally relieved by the cold bath; tongue white and moist. Continue medicines and cold bath. 15th. Pulse 92; tongue moist and more red than formerly; feels himself better. In the evening, however, a slight exacerbation came on; pulse 100, and the tongue resumed its whiteness. Complains of a soreness at the articulation of the jaw of the right side. Continue medicines and cold bath. 16th. Pulse 120; was severely attacked with purging during the night, and passed a considerable quantity of blood by stool. In the evening,

evening, although the pulse continued 120, he felt easier, and continues to perceive much relief from the use of the cold bath. Continue medicines. 17th. Pulse 100 ; a considerable swelling of the right parotid, and abscess appear forming ; an emollient apoltice applied. 19th. There is a considerable tumefaction of the left side of the face and eye-lids ; the right parotid much enlarged, but still hard ; pulse 92. In the evening pulse rose to 120 ; swelling of the left side of the head greatly increased, and has a hoarseness in speaking ; belly regular. 20th. The abscess burst in the night time, and a very considerable discharge of purulent matter took place by the throat and ears ; the smell extremely offensive. 22d. The abscess opened externally, and a considerable discharge of yellow matter was consequently made ; pulse still 120. From this period he continued recovering, the discharge being very considerable.

CASE VI.

John Hasty, aged twenty-one, black complexion. After labouring under dysenteric symptoms, for about a week, was admitted on the 8th May. On the 10th, the dysenteric symptoms were superseded by those of the yellow remittent

fever. On the 11th, the pulse being very full and hard, although no more than 78 in the minute, the skin dry and parched, the tongue covered with a thick crust, and the other symptoms, such, particularly, as the headach, pains in the loins and limbs, and oppression at the pit of the stomach, strongly indicating it, about ten ounces of blood were drawn, and the sp. mind. freely given. In the evening, having experienced no relief, and the blood drawn in the morning having thrown up a buffy coat, the bleeding was repeated. 12th. Rested badly; headach rather less; but pulse, although no more than 76, is still rebounding in a recumbent posture, but sinks when he sits up. Soreness in his throat, and, on examination, both amygdalæ, tumid, and much inflamed; has fainted several times during the night; six grains of the oxygenated muriate of potash were given every four hours. In the evening, urine deep yellow; no headach; has repeatedly fainted, and sighs much; soreness of the throat more complained of; pulse 76, soft and feeble; the medicine increased to eight grains every three hours. 13th. Pulse 80, soft and feeble; comatous; faints on the least movement; a livid appearance taken place on the amygdalæ; great thirst; remarkable yellowness of the ad-natæ.

natae. Continued the muriate in doses of ten grains. With a view to rouse the torpor of the system, forty drops of the arsenical solution were given twice or thrice without effect. He expired at ten P. M.

CASE VII.

Joseph Hart, aged twenty-eight, black complexion, black hair, was admitted on the 29th March, for a quotidian intermittent. - April 1st. Principal complaint a troublesome cough, with pain in the chest; pulse 96. 3d. Pulse 116; skin of a burning heat, attended with headach; antimonials, nitre, and saline juleps lessened the violence of these symptoms. 22d. His complaint became a bilious remittent fever. Pulse, during the exacerbations, 120. For this he took the oxygenated muriate of potash, four grains every four hours. 24th. Having continued the muriate, pulse 84; skin cool, headach gone; tongue white, and urine passed in large quantity. Continued the muriate. 27th. Free from complaint, and soon after discharged.

CASE VIII.

Benjamin Green, aged twenty-one, black complexion, black hair, admitted May 18th. Last

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night

night about sun-set, soon after coming off parade, was attacked with a cold shivering, which lasted about two hours; headach after ceasing of the cold fit, attended with violent heat which continued all night; but without pain in the loins or calves of the legs. Pulse eight A. M. 126; tongue whitish and moist; pain generally in the head, chiefly in the forehead; eyes inflamed slightly. Has been only three months in the country, stout made, florid; had a solution of salts and tart. antimony. Evening, felt easier after sustaining another paroxysm of cold shivering, and violent heat, from eleven A. M. to two P. M. Solution operated well; pulse 100. Ordered ten grains Dover's powder, and six of calomel. 19th. Pulse 110; eyes more inflamed; vomited much during the night, and can keep nothing on his stomach; tongue whitish; has had several loose stools; complains of stiffness of the lower extremities. Ordered ten grains calomel, and one grain opium every third hour. Two P. M. has frequently vomited; purged often; urine free and copious. Six P. M. has had two stools without vomiting. Continue the calomel, and to have, besides, one grain of soluble mercury every four hours; thirst continues; but passes urine freely; eyes not so much inflamed, and
 light

light less offensive to them. With a view to try the effect of the oxygenated muriate of potash after this preparation of the system by means of mercury, that medicine was ordered in doses of eight grains every four hours. 20th. Pulse 100; skin rather softer; eyes less inflamed; purged much during the night without griping; stools yellowish and thin; tongue white; urine suppressed in some degree; considerable thirst. Continue muriate. Two P. M. pulse 88, but fuller than in the morning; skin, however, warmer with headach. Six P. M. pulse 92; skin still hot and dry; body very open; complains of general forenefs; vomited only once, and that after drinking wine and water contrary to order. The patient's situation becoming alarming, it was judged advisable to renew the mercury, and administer it in every form; to continue the muriate as before at the same time, and to excite the system by bathing the feet in cold water, and applying a solution of nitre in vinegar to the head, after shaving it; and by injections of cold water. 21st. Seven A. M. pulse 90; skin hot and dry; belly very open; has vomited but once, and brought up a little blood; headach easier; eyes still a little inflamed; general forenefs still complained of; he imagines his mouth is a little affected

affected by mercurial action. Continue medicines, &c. One P. M. had only one very black stool, attended with vomiting; pulse 80, and more feeble; a blister applied to the stomach. Six P. M. has vomited considerably since morning; pulse 80; tongue cleaner, but tremulous; urine free; faintness on attempting to move; skin quite dry. Continue. 22d. Pulse is scarcely to be felt at the wrist; raved during the night; tongue whitish and tremulous; breathes with great difficulty; urine suppressed since last night; vomiting ceased; petechiæ in the breast and arms. Expired at ten A. M.

The discontinuation of the mercurials on the 19th, probably the cause of the fatal event; but the following seems to disprove this.

CASE IX.

James Patterson, aged thirty, fair complexion, admitted May 19th, was seized with the usual symptoms of yellow remittent fever, on the morning of the 18th; pulse 120, and, in addition, has now a considerable vomiting of bilious matter, and frequent purging. Has been only three months in the country, but was in the West Indies before for some years; urine yellow; ordered ten grains of calomel, and one grain of opium,
every

every four hours. 20th. Symptoms unabated. His head being shaved, a solution of nitre in vinegar applied to it ; and the mercury being discontinued, eight grains of oxygenated muriate of potash were ordered every four hours. 6 P. M. Pulse 82. Belly open, and great inclination to vomit ; has retained the muriate. Continue. 21st. Pulse 88. Skin cool and moist ; body rather bound ; thinks himself better ; headach almost gone ; tongue become white, and the sudden change of its colour gives rise to a belief that it is the effect of the muriate. Continue. 23d. Considerably better, indeed without complaint. June 6th. Discharged cured.

CASE X.

D. Cross. A case similar to the foregoing, with this difference only, that the treatment did not commence till late on the second day. Treated precisely in the same manner. Patient died on the fifth day. Vomiting bilious at first, latterly black.

CASE XI.

Alexander Grant, aged 21, black complexion, was admitted on the 28th April, for a remittent bilious fever. Various remedies were made use of ineffectually,

ineffectually, till the 1st of May, when he began the oxygenated muriate of potash, in doses of four grains every four hours. Pulse 104. In the evening, pulse 80, and other symptoms much relieved. 2d. His state being in every respect much better, the bark was imprudently administered. It was continued all the 3d, and on the 4th, pulse rose to 96, attended with head-ach and other symptoms of fever. The bark was discontinued, and the muriate given as before. The symptoms on the 5th yielded, and a few days after was discharged free from complaint.

CASE XII.

George Beattie, aged 24, black complexion, black hair, had been in the hospital in April for a slight dysenteric complaint. Discharged cured, the 2d of May. Re-admitted on the 20th May, was seized in the morning with the usual symptoms of yellow remittent fever, but in a milder degree than had hitherto occurred ; and the case was therefore judged a fair one to make a trial of the oxygenated muriate of potash, without any preceding or concomitant medicine. The reports are stated as they were taken down in the sick journal.

20th May. Was attacked this forenoon, about ten, with a violent pain in the head, and slighter pains in the loins, without any preceding cold fit. These symptoms have continued on his admission in the evening: Pulse 130, skin dry, tongue slightly whitish and moist; had one stool this morning, and rather costive; urine high-coloured; thirst. Eight grains of the oxygenated muriate of potash ordered to be taken every four hours. 21st. 7 A. M. pulse 104; skin moist; had some sleep during the night; tongue moist and clean; urine more yellow than last night; headach easier; belly open; continue. 1 P. M. pulse 104, fuller than in the morning; skin drier; head still easy; tongue white; continue. 6 P. M. pulse 104; has slept much since noon; headach returned; tongue white; belly open; makes urine freely; complains of deafness; skin softer and inclined to sweat. The dose of muriate to be increased to ten grains. 22d. Pulse 92; tongue still white; rested well in the night, and finds himself easy; body open; passes urine freely; eyes less inflamed; continue. 6 P. M. pulse 84; skin hot; tongue white as before; belly very loose, and stools yellow; urine yellow; headach easier; thirst; considerable sickness at stomach, and vomited once or twice. Continue.

23d.

23d. Pulse 80. Passed an uneasy night, with vomiting brown and flaky matter; purged the same dark-coloured fluid. Complains of violent pain in the loins; skin warm and moist. Continue. At noon. Pulse very low; vomiting still continues, and of a black fluid like coffee-grounds. Ordered to be wrapped in blankets wrung out of hot water, and then plunged into the cold bath for ten minutes. Continue the muriate. 2 P. M. Pulse 64 and low; petechiæ have appeared, and hiccup. Boluses of musk ordered, with a frequent repetition of the cold bath. 6 P. M. Has been thrice in the cold bath since noon; slept frequently. Pulse 84, and rather fuller; tongue moist, with a few black streaks on it; skin natural heat; has taken a considerable quantity of porter, and several times gin, which he fancied; breathes easy; slight yellowness of the skin; hiccup ceased since 2 P. M. Has had many yellow stools, vomits very little, and the fluid less black than formerly. After the evening visit, fell into a deep sleep and coma, and remained in that state till 7 A. M. of the 24th, when he expired without a struggle.

CASE XIII.

— *Yates*, aged 29, brown complexion, had a slight remittent about the middle of April. On the 23d of May was re-admitted, with all the usual symptoms of the yellow remittent fever, with which he was suddenly seized about 10 A. M. whilst on the arsenal guard. A mild dose of *natr. vitriolat.* was given to him; and after the operation of that medicine, the cold bath was directed to be administered. 6 P. M. Has been in the cold bath; his pulse diminished from 120 to 106; skin now cool, and the pains are easier. The case being recent, and the symptoms assuming nothing very formidable, it was judged a fair one for a trial of the oxygenated muriate of potash; but the fatal termination of the case of *Beattie*, whilst it diminished our hope of success, determined us to combine other remedies of more active operation, should any untoward appearance take place. The muriate was accordingly ordered in doses of eight grains every four hours, and the cold bath to be repeated in the morning. 24th. 7 A. M. Has been in the cold bath, and has continued the muriate. Thinks himself in general easier; the headach abated, and complains more of weakness than pain in
his

his limbs ; tongue covered with a thin white crust ; face very much flushed ; belly open ; pulse 94. Continue, 6 P. M. pulse 86 ; skin cool ; has used the cold bath four times in the course of the day ; had a cold shivering fit about an hour after coming out of the cold bath at 3 P. M. which lasted three quarters of an hour ; he has not been hot since ; headach considerably abated ; face still flushed ; eyes inflamed ; had six stools. Continue. 25th. Rested ill in the night ; found himself much heated, and sweated a good deal ; body open ; pulse 110. Had a short shivering fit after coming out of the cold bath this morning ; feels no pain ; face flushed, and skin warm and dry. Continue. 10 A. M. Had a vomiting of a black fluid since 7 A. M. ; pulse scarcely perceptible ; face more flushed than ever ; had one loose stool ; skin very dry and warm ; blisters to be applied to the head, and inside of the thighs ; and two drachms of calomel to be rubbed in on the inside of the cheeks and on the gums. Continue muriate. Noon. Pulse has rose, and is now about 90. 6 P. M. Thinks himself easier ; vomited a black fluid ; pulse 100 ; skin cool and moist ; blisters rose ; blistered parts to be dressed with mercurial ointment ; the calomel friction, and the muriate continued.

26th.

26th. 8 A. M. Considerable thirst ; skin dry ; petechial spots on the arms ; pulse imperceptible ; face much flushed ; eyes inflamed ; frequent inclination to go to stool, but passes nothing. A laxative injection immediately. No good effect having been produced by the remedies hitherto used, the dose of muriate was increased to twelve grains, combined with sixteen of calomel, every two hours. 6 P. M. Pulse 100, and very feeble ; breathes with great difficulty, and frequently delirious ; face of a purple colour ; the adnatæ of the eyes dingy, the corneæ muddy or filmy ; an old blistered part of the breast of a dingy red colour ; has had no stools ; has vomited repeatedly, particularly after the oxygenated boluses. 27th. His pulse gradually sunk ; skin became colder ; delirious all night, and expired about 7 A. M.

CASE XIV.

— *Beardmore*, a young man about 25, brown complexion, seized on the 5th of May, at 5 P. M. with pain across the eyes, small of the back, thighs, and calves of the legs. The violence of these obliged him to retire to bed ; and on the morning of the 6th, when the symptoms enumerated were considerably encreased, with

the addition of pain in the orbits, intolerance of light, and oppression at the scrobiculus cordis, he was admitted into the hospital. A solution of *natr. vitriolat.* was given to him in divided doses; and although the greatest part was immediately rejected, a sufficiency was retained to produce plentiful evacuation. About noon he began the use of the oxygenated muriate of potash in five grain doses, to be repeated every four hours. Having taken two doses, or ten grains, the symptoms were evidently relieved. 7th. 10 A. M. Has scarce any very troublesome complaint; a heaviness in his head, some degree of intolerance of light, and a slight spasmodic affection of the *gastroc-nemii* muscles, alone remaining. Has taken five doses or twenty-five grains, but the medicine has produced no evident action on the system. Pulse 90, soft; skin covered with a moderately warm diaphoresis; tongue clean. 8th. Has continued the muriate, and has no complaint but a slight uneasiness at the *præcordia*, and a quickness of pulse, which is 102. His feelings otherwise are perfectly natural; tongue become remarkably white. Hitherto no other operative effect perceptible of the oxygenated muriate of potash. 9th. Continues recovering. Soon after discharged well.

CASE XV.

Mrs. Beardmore, wife of the preceding, a case almost exactly similar at commencement of the fever, at 4 P. M. 5th May. The oxygenated muriate exhibited in the same manner. 7th. Vomiting of black fluid: eyes muddy, and so circumstanced as to have the appearance of one uniform gelatinous mass, the pupils not being easily distinguished. Pulse 102. Heat of the skin pungent, surface dirty or dingy colour; aged 19, and she and her husband have been in the climate only four months. 8th. Delirium, violent pungent heat at the præcordia, and gnawing pain at the stomach; suppression of urine. Taken 40 grains of oxygenated muriate of potash: ordered to be repeated every third hour; tongue bluish white. 9th. About 7 P. M. yesterday, became suddenly quite cool, and continued so till 6 A. M. of this morning; during this time she remained perfectly tranquil, and apparently in profound sleep. At 6 A. M. she suddenly became restless, but could not articulate. Delirium and continual attempts to get out of bed, and excessive pain and anxiety, but without being able to refer her feelings to the situation of the pain, distinguished this state. A kind of remission of

this pain and anxiety seemed to take place every five minutes ; but it was immediately succeeded with the most dreadful shrieks. Tongue deep yellow, tending to brown ; and an eruption of petechial spots has broke out chiefly about the neck, shoulders and breast, with small vibices interspersed. Eyes greatly inflamed, and muddy or clouded as before. Pulse small, extremely irregular, and seems to intermit frequently. Has had scarce any vomiting, and no stools, although two injections were administered. About an hour after the foregoing report was taken, she expired.

The body was opened, and the following appearances were observed : The blood-vessels of the membranes of the brain very turgid, and the membranes themselves inflamed. In the ventricles much bloody serum. Heart sound ; liver rather larger than usual ; its substance firm ; the surface mottled or marbled. The lungs sound. Spleen enlarged. Stomach distended with air ; about a pint of a coffee-coloured fluid contained in it, the villous coat abraded, and a gangrenous appearance on its surface.

CASE XVI.

Mr. F——, of the royal engineers, was seized in the month of April, 1798, with symptoms of the simple remittent bilious fever. Had been evacuated, but on the third day the exacerbation becoming more violent, I judged it a fair case for the employment of the oxygenated muriate of potash, and to this I was more inclined by the patient's insuperable dislike to unpleasant medicines. Four grains were given every four hours, and continued all the 4th and part of the 5th day, when the symptoms were entirely relieved, and signs of returning health were perceived. The medicine was then desisted from, and soon after the patient was fit for duty. The effect of the oxygenated muriate in this case was rather singular; indeed, I have only observed it in two other cases. The edges of the tongue were slightly affected with a florid redness, the centre was white, but a little way from the root there was a large clean sore, or rather excoriation; and another upon the palate corresponding to it. The gums were raw, but there was none of the peculiar smell which attends the action of mercury. The restoration of strength was infinitely quicker than usual.

CASE XVII.

Thomas Wilshaw, aged 29, dark complexion and hair, admitted May 9th, 1798. After slight rigour was suddenly attacked last night with pain in the loins, and generally over the body; pain in the occiput, succeeded by an accession of heat, great thirst, &c. These symptoms have continued. Pulse 120; tongue whitish; belly open. Ordered the nitrous acid in the following form:
 ℞. Acid. nitros. ʒi. aq. lib. $1\frac{1}{2}$ syrup. ʒiij. m. sumend. in die. In the evening swote considerably. 10th. Attacked during the night with violent looseness, without griping; stools thin and yellowish. In the morning a vomiting came on. The nitrous acid in the foregoing dilution was continued in small doses, so as to finish the bottle. The vomiting, however, increasing to an alarming degree, the bottle was not renewed, but various means were resorted to absorb the acid already received. The vomiting could not be checked, and the discharged fluid was of a most acrid sourness. 11th. The same distressing symptoms having augmented, the whole of the day was employed in the assiduous use of magnesia, with essence of peppermint, æther, opiates, &c. and blisters were applied: all these proved
 totally

totally ineffectual. 12th. Pulse 68; tongue red and dry in the centre, edges moist and white. The vomiting having somewhat abated, and it being evident that the nitrous acid could no longer be employed without hazarding the life of the patient, it was totally laid aside, and calomel, with the occasional addition of the soluble mercury, was substituted. 13th. Vomiting somewhat troublesome; other symptoms as before; no mercurial action. Continue. 14th. Appearance of yellowness in the eyes and face, former greatly inflamed. Return of vomiting to as violent a degree as on the 10th and 11th. Pulse 64, very feeble and tremulous. Subfultus tendinum. Teeth and gums covered with black fur; blisters applied to the back, stomach and thighs. 6 P. M. Stomach became suddenly more retentive, but pulse more and more sunk; at 10 P. M. expired. The examination of the body exhibited the fatal effects of the administration of nitrous acid in this tremendous fever. The stomach very much diminished in size, the villous coat every where abraded, and evident marks of gangræne.

In this single case the nitrous acid was employed, but its effects were by no means such as to induce us to make, or to warrant a second trial. It is evidently inappropriate in a disease,

where the stomach is in a highly morbid state, and where, consequently, its use must necessarily produce an irritation, rendering that organ incapable of retention, or of performing its peculiar functions.

APPENDIX, No. III.

Cases of Visceral Affection treated with Oxygenated Muriate of Potash and Nitrous Acid—in the Ordnance Hospital, Fort Royal, in 1798.

CASE I.

Alexander Johnston, aged twenty-seven, fair complexion and hair, admitted 20th March, afflicted with several anomalous dysenteric symptoms, and periodical exacerbations of fever; pulse varying from 96 to 120. These complaints continued, and resisted various remedies, till the 14th of April, when visceral obstruction being considered as the cause, and a pain in the right side, under the false ribs, becoming stationary, with a swelling of that part, and œdema of the lower extremities, a drachm of the nitrous acid, diluted in a quart of water, was ordered to be taken daily. On the 27th he was discharged free of complaint.

— *Fulton,*

CASE II.

— *Fulton*, aged twenty-eight, black complexion and hair. March 26th, 1798. About fifteen months ago, was first attacked with dysentery, which changed into an intermittent, and was afterwards followed by a general yellowness of the whole skin, yellow urine, white stools, and other symptoms of jaundice. With a view to recovery, he was sent to Barbadoes, where he remained eleven months. On his return to Martinico, the dysenteric symptoms again recurred, with occasional paroxysms of intermittent fever. April 2d. There appears to be a considerable enlargement of the right lobe of the liver, a round circumscribed tumour about the scrobiculus cordis, extending under the cartilaginous extremities of the false ribs of the left side; lies easiest on the left side; has at times a distressing short cough; pulse 86; ordered a drachm of the nitrous acid in a quart of water in the day. 4th. Medicine agrees with him. Complains of pain in his legs and thighs. 9th. Continued the medicine. Complains of some degree of faintness and oppressed respiration. 15th. Complained of swelling and soreness of the gums; tumour at the scrobiculus cordis much diminished. 25th. Complains of pain in the
lower

lower part of his throat, and angles of the jaw ; gums excessively sore, with considerable salivation without foetor. This effect of the medicine, and the morbid symptoms having disappeared, the nitrous acid was discontinued. Soon after discharged cured.

CASE III.

William Stimson, admitted March 29th, for a sore on the tibia. April 17th. Had feverish symptoms ; pulse 110, attended with violent pain in the left side of his breast, and difficult respiration. For these, was bled and blistered, and took a mercurial purge ineffectually. 19th. Pain shifted lower down, and extends to the scrobiculus cordis ; lies easiest on his back ; pulse 92 ; bleeding and blistering repeated, and began the use of the oxygenated muriate of potash, in doses of five grains every four hours. 20th. Dose increased to eight grains. After taking about sixty grains, tongue became whitish ; but had an exacerbation of fever at night. The secretion of urine rather less than natural. Continue. 21st. A singular eruption of furunculi appeared on the scapula of the left side, attended with pain. 22d. An eruption of pimples on the left breast, full of yellow serum, with some difficulty of breathing.

In

In the left axilla a glandular swelling appeared; dose increased to ten grains. Continue. 23d. Tongue of a bright white; secretion of urine increased; eruptions have spread considerably, and another glandular swelling in the axilla. No pain, and only a slight giddiness complained of; pulse 80. May 2d. Free of all complaint and discharged.

CASE IV.

— *Lawder*, a German, admitted 29th March, for a tertian intermittent, with visceral obstruction, which he had laboured under for near six months before. Unable to lie on the left side, and feels considerable pain under the right false ribs. He had at first a blister and Dover's powder, with two grains of calomel, morning and evening. April 2d. Began the use of the nitrous acid, two drachms diluted in a quart of water, in doses of four ounces every third hour. The calomel having been discontinued, he could have taken no more than eight grains. 6th. Gums and salivary glands so much affected, that the nitrous acid was necessarily discontinued, and small doses of sulphur were given to check the salivation. 16th. The pain entirely gone. In the month of May this patient had a feverish complaint, attended with considerable

considerable tension, and swelling of the abdomen; for which he had a powder every four hours, composed of five grains of oxygenated muriate of potash, and four grains of calomel. On the 26th, added to this, mercurial ointment was rubbed on the abdomen. 28th. Mouth only gently affected. After this he continued to recover.

CASE V.

— *Stryfe*, a German, admitted April 8th. About five months before, after an intermittent fever and dysentery at Trinidad, he was seized with a violent pain in the region of the spleen. A course of mercurial friction relieved him, having induced a salivation. About the 4th, however, at Martinico, the complaint returned with additional violence, with difficult respiration, fever during the night, colliquative sweats; a sense of internal heat, and external cold; great thirst. On examination the spleen was found very considerably enlarged, and the whole of the abdomen much swelled. His general appearance was that of a person wasted by long sickness; his complexion clear, and the adnatæ of the eyes of a glassy or transparent whiteness. 10th. He began the nitrous acid, three drachms to two pints of water
per

per day. 18th. The sense of internal heat gone, and no disagreeable sensation of external cold ; and the pain in the left side is no longer felt. A purging having been brought on by the nitrous acid, the proportion was diminished to one drachm to the quart of water. 21st. Complains of his mouth ; swelling of the abdomen and enlargement of the spleen diminished very considerably. 25th. Swelling of the abdomen, &c. entirely gone ; pulse still continues 100. 27th. No complaint. The nitrous acid was now discontinued, and instead of it, a mild chalybeate medicine was administered. On the 6th of May discharged free from complaint.

CASE VI.

— *Muller*, admitted April 11th. A swelling of the left testicle came on twelve months before, in consequence of an injury received in that organ. About six months after he had regular attacks of a tertian intermittent, which have continued ever since. Water is perceptible in the scrotum. 17th. The abdomen was considerably swelled, in addition to the hydrocele and intermittents. 21st. In further addition to the complaints stated, a swelling and hardness were perceived under the left false ribs. A variety of medicines

dicines having produced no change, he began, on the 21st, the oxygenated muriate of potash, in doses of four grains only, thrice in the day. 23d. Belly softer and much reduced ; and his general appearance changed much for the better. Secretion of urine greatly increased, and tongue white. The latter appearance so remarkable as to astonish the orderly man in attendance. May 2d. Discharged free from complaint.

CASE VII.

— *Biggens*, for a year had been afflicted with a pain in his right side under the false ribs, painful to the touch. He had intervals of relief, but no permanent ease had been produced. Admitted in this state, April 17th. 19th. Began the nitrous acid, a drachm to a quart per day. 22d. Mouth slightly affected. Continue. 26th. Discharged well.

CASE VIII.

— *Buxton*, admitted April 24th, had all the symptoms of acute hepatitis ; pulse 120. After being freely bled and blistered, the oxygenated muriate of potash, in doses of four grains, every fourth hour, was given to him. 27th. Almost free of complaint. 30th. Discharged well.

— *Tarbott*,

CASE IX.

— *Tarbott*, admitted April 29th. This man had for more than twelve months laboured under a general morbid affection, very much resembling the complaint called, by the French, the *mal d'estomac*. A bloated fallow complexion; swelled abdomen; swelled feet; an asthmatic affection of the lungs; a white tongue, with a bluish list towards each edge; a watery clear eye; characterised his state. With these, he had now a short cough, and pain in the left side. The appetite in this morbid state, is increased much beyond what it would be in the same person during health, by a peculiar stimulus applied to the stomach. The pulse is generally small and quick; but in this case it was natural. After the application of a blister, and the operation of a purgative medicine, on the 2d May, the nitrous acid was begun in the proportion of a drachm to a quart of water in the day. 4th. He was evidently better. 8th. Felt slight affection of the gums and salivary glands. 15th. Nitrous acid discontinued, having produced a nausea and vomiting. All his symptoms considerably better. Continue the acid in half the proportion. 18th. Free from complaint; but a state of debility rendered it necessary to change the climate.

— *Yorkevitz*,

CASE X.

— *Yorkovitz*, a Pole, aged thirty, was admitted on the 1st May, for several anomalous visceral complaints, which, on the 5th, became fixed and determined; and chronic hepatitis was declared to be the disease. For this the oxygenated muriate of potash, in doses of four grains every four hours, was given. The tongue became white, and the secretion of urine increased after only twenty grains had been taken. On the 8th, the disease was more troublesome, and such symptoms took place as threatened suppuration. In consequence of this, strong mercurial ointment was rubbed in on the side affected, and the muriate continued. 11th. Pulse, which had hitherto been about 80, quickens to 96. Pain rather easier; tongue very white, and urine discharged in a large quantity. In addition to the muriate and friction, five grains of calomel ordered every three hours. The event, however, proved that there had been something wanting in the treatment; for, after lingering out about three weeks, he died on the 1st June. The desideratum in this case was bleeding freely at the commencement.

CASE XII.

— *Cooper*, admitted May 11th. Disease, acute hepatitis of two days standing. Took nitrous acid (one drachm to a quart) on the 13th, and felt relief; but the medicine affecting his stomach and bowels, was changed for the oxygenated muriate of potash. In a week discharged well.

CASE XII.

Alexander Dunlap, aged thirty-four, admitted May 22d. Disease, sequelæ of long continued intermittents, and repeated remittents, an enlarged spleen, and general anasarcaous swellings. Immediately began the use of the nitrous acid, in the proportion of a drachm to a quart of water per day. June 18th. In every respect state greatly improved; and indeed without complaint, except pure debility.

CASE XIII.

— *Stanningnot*, admitted Sept. 6th. About two years before received a considerable injury in his right side, which the use of medicine seemingly removed. For some time before his admission, had a diarrhoea. His principal complaint at present is great debility and œdema of

his legs and feet ; urine scanty. For these he had an emetic, and was put on a course of bitters. 9th. Diarrhoea returned, accompanied with fixed pain in the right side ; for this, a pill of two grains calomel, thrice in the day, was added to the course of bitters. These he continued till the 23d, without relief ; his complaints becoming consequently stationary, and debility greatly increased, these medicines were discontinued, and six grains of the oxygenated muriate of potash were given thrice in the day. 24th. The muriate seemed to increase the purging, but sat easy on the stomach. 25th. A yellow suffusion began to take place in the adnatæ of the eyes, and on the surface of the body. Complains of pain at the scrobiculus cordis, as well as along the course of the biliary ducts. Pulse 96 ; tongue white ; passes more urine than before using the muriate, and very yellow ; stools whitish ; continue, and apply a blister to the right side. 29th. Muriate continued ; complains of pains in his thighs and knees ; and the pains stated on the 25th continue, though lessened ; urine considerably increased. October 5th. Yellowness disappeared ; slight pains in the arms and legs ; swelling almost gone. Continue. 8th. Free of complaint.

CASE XIV.

Francis Garleh, admitted December 15th. Chronic hepatitis twelve months standing; troublesome cough, worst at night, and always attended with purulent spitting; lies easiest on the right side; pulse 80. Immediately began the nitrous acid (one drachm to a quart per day), and persevered in the use of it till January 5th, 1799, when free of complaint.

CASE XV.

The following case has been communicated by a medical friend: “ *Captain W——*, of the —— regiment, is past the prime of life, is naturally of a healthy constitution, but it has been much impaired by a course of hard living, which has not been corrected by exercise, but aided by the sedentary occupation which duty has rendered necessary. After long habituation to this mode of life, circumstances determined him to effect a change; but the change having been precipitate, gave rise to a variety of anomalous symptoms, which neither himself, nor his medical friends, could refer to any particular affection; an eruption of angry sores on different parts of the body accompanied them. Little, besides gently open-

ing the body, and the occasional use of sulphur, was done ; and the sedentary employment was still necessarily pursued. On the 19th April, 1798, his morbid state assumed a more determinate form. On that day he was attacked with violent headach, considerable degree of fever, full, strong, and tense pulse, foul tongue, thirst and tension about the præcordia. On the 20th I was called in to see him. He had passed a very restless night, his headach and every other symptom much aggravated. Some blood was drawn from the arm, which, after standing some time, exhibited a dissolved crassamentum. After shaving the head, a blister was applied to the whole of it, and a few grains of James's powder were given at bed-time. He passed, however, a restless night, but towards morning (21st) the headach and other symptoms were relieved, but little abatement in the quickness of the pulse ; thirst, &c. took place. He now began the use of the oxygenated muriate of potash in doses of four grains, repeated every four hours, with apparent relief. On the 25th, he complained of an erysipelatous inflammation of both legs, tense and painful to the touch, with considerable swelling.

It is necessary to pause here a moment and reflect upon the case. Our patient was past the
prime

prime of life, had resided many years in the West Indies, took but little exercise, lived freely, and had also been accustomed to drink too abundantly of porter, and was consequently inclined to that species of corpulency, the consequence of such habits. I consider this, therefore, as a case of defective oxygenation, and have also reason to suspect a very usual attendant in such cases, some latent affection of the liver; a conclusion which the erysipelatous inflammation on his legs tends much to confirm. I therefore determined on continuing the oxygenated muriate in still larger doses. 27th. At midnight he felt a sudden attack of pain under the right false ribs, stretching to the acromion, with cough, hard pulse, and inability to lie on the opposite side. A blister was immediately applied to the affected side, and about twelve ounces of blood taken from the arm, which *now* exhibited a thick buffy coat covering a florid crassamentum, and with a less proportion of serum. The appearance of the blood, and the relief which this evacuation afforded, induced a repetition; and the oxygenated muriate of potash was still continued. The tension and erysipelatous inflammation of the legs subsided, so soon as he was attacked with the affection of the side. As the oxygenation of

the system proceeded, after this detection of the principle seat of his disease, and after the limited depletion mentioned, his appearance improved, and his strength augmented. On the 4th of May he was removed from Fort Royal to Gros Morne. He suffered at first from the fatigue of this journey ; but perseverance in the oxygenated muriate, together with the hospitable attention of Colonel Soter, his landlord, and the healthy situation of the place, soon contributed to a rapid recovery. When every symptom of topical affection was removed, bark was given, in conjunction with the oxygenated muriate, for some weeks. His appetite by degrees returned, and, upon the whole, he found himself so well recovered by the middle of June, that he could ride, walk, and take some exercise. During his residence at Gros Morne, he drank considerably of a beverage made of four oranges, and eat freely of the fruit, which, no doubt, contributed to supply the defective oxygen. It is not unworthy of remark, that thus a patient, given up by some eminent physicians in the month of April, was restored to complete health in the month of July, which has since been confirmed by the climate of England.

APPENDIX, No. IV.

Cases of Venereal Affection treated with Nitrous Acid.

CASE I.

— *Ward*, admitted July 27th. Copper-coloured blotches on the skin; complains of flying nocturnal pains; the tibia considerably affected, irregularly enlarged; and pains of excessive violence are also complained of along the whole of the humerus and forearms. These symptoms of an old standing. Began the use of the nitrous acid (a drachm to a quart of water per day). 30th. Pains much easier; and during the night sleeps better. September 5th. The enlargement of the tibia greatly diminished; and the general pains very little felt. 9th. Without complaint, and discharged cured.

CASE II.

— *Chefman*, admitted April 18th. Chancres on the glans; a small ulcer on the scrotum, and another on the verge of the anus. Has had the

venereal affection two years. Although twice before in the hospital, and taken medicine, no change whatever was produced on it. Began the nitrous acid on the 19th (a drachm to a quart of water per day). In about a fortnight he was discharged cured.

CASE III.

George Moor, admitted September 14th. Principal symptoms, nocturnal pains in his knees, and along the whole course of the tibia. On examination, find an enlargement of the right tibia near the lower extremity of the bone, on the fore part. Says he has had the venereal disease several times in England, and had been apparently cured just before his embarkation for the West Indies. Ordered the nitrous acid, two drachms to the quart of water per day. 9th. All the symptoms stated having disappeared, he was discharged at his own request.

CASE IV.

— *Gill*, foreign artillery, admitted July 1st. About eight years ago, at Valencia, in Spain, he first complained of symptoms of venereal affection. The symptoms were—a bubo, several chancres, severe pains in the arms and legs, and a
flight,

flight, but fixed pain in the forehead, over the coronal future. He underwent a course of mercury, and was free of complaint for five years, except some pain about the middle of the right tibia. This, about sixteen months ago, swelled, and grew more painful. About four months ago, in addition to the complaint in the tibia, a swelling of the radius of the left arm came on. At present the pains in the tibia are so severe as to prevent sleep, and on it is a node of considerable size. On the radius is also a node of equal size, and a considerable enlargement. Immediately after admission, put upon a course of the nitrous acid, two drachms to a quart of water per day. 24th. Has continued the acid unremittingly. He now rests well at night; nodes undiminished, except that now furrows are perceived on their surface. The enlargement of the radius has greatly diminished. Continue. 27th. Nodes now greatly diminished, and general health improved. Nitrous acid increased to three drachms per day; but disagreeing with him, reduced to two. 30th. Intirely free from pains. Continue. August 6th. Every symptom disappeared; but having been ordered to Trinidad on duty, the final result, with respect to permanency of cure, unknown.

CASE V.

Mac Cawley, admitted July 18th, gonorrhœa. Ordered the nitrous acid, a drachm and a half per day in a quart of water. 21st. Discharge greatly abated, and no pain. 29th, Discharged cured.

CASE VI.

— *Myers*, admitted April 14th, for symptoms of lues of a considerable standing. These symptoms were not sufficiently evident till about the beginning of May. He then began the nitrous acid, a drachm to a quart of water. This he continued till the 23d of May, when the symptoms disappeared. Towards the end of the month, discharged well.

CASE VII.

Communicated by a medical friend. *M. C. C.* had laboured under a gonorrhœa for several months, and a chancre had appeared on the glans. He had taken a few calomel pills, which soon exciting salivation, and being afterwards attacked with dysentery, he was reduced very low; but the only remaining venereal symptom was a slight gleet. On recovering from dysentery,

tery, and going to St. Pierre's, he was attacked there with a violent remittent fever. Having recovered from this, he returned to Fort Royal. It appears, that during this state of febrile action, that of the venereal virus was suspended; for, immediately after his recovery from fever, he was alarmed by the appearance of a chancre in the very verge of the orifice of the urethra; attended with a yellow foetid running, and excruciating pain in making water. This did not proceed from a new infection. I gave him fifteen grains of the oxygenated muriate of potash, thrice in the day, and ordered the chancre to be dressed with a watery solution of the muriate of mercury. As the chancre had spread very fast, I was under a necessity of using the mercurial solution to cleanse it, otherwise I would have trusted to the oxygenated muriate alone. The change was rapid on the local affection, for in two days it was cleaned, and assumed a healthy healing appearance; and in a week was healed up: but the change produced in the fore was nothing compared to the general alteration produced in the patient's state of health. His countenance, before using the oxygenated muriate, had been yellow and bloated; a slow hectic wasted him; appetite gone; tongue and lips pale;

pale ; restless at night ; melancholy, &c. His countenance, after taking 360 grains of the oxygenated muriate, became clear, cheeks acquired more colour, lips their natural hue, less thirst, good appetite, rested well, and was in high spirits. The medicine exhibited its usual effect on the tongue and urine. His cure was complete.

APPENDIX, No. V.

Cases of Yaws and Leprosy, treated with Nitrous Acid and Oxygenated Muriate of Potash.

CASE OF YAWS.

William M'Kearnan, aged 23, admitted August 18th, 1798 ; arrived with the last detachment of artillery from England. Immediately before leaving England, stationed at Hilsea barracks, where he says his present complaint was contracted by sleeping in the same bed with an infected person returned from the West Indies. His complaints are entirely confined to the skin, and consist of a number of large ringworms, and about the loins there are four yawy excrescences. In other respects he is in good health. After a purge, he was put, on the 29th, on a course of the

the nitrous acid, two drachms to a quart of water per day. September 2d. Has a yaw upon the calf of the right leg : an erysipetalous eruption on the same leg : the disease evidently yaws. Continue. 6th. Complains of his gums being raw and florid : the medicine otherwise agrees with him, and the yawy sores beginning to mend. Continue. 9th. A fresh eruption of yawy excrescences has taken place on the lumbar region, and on the left scapula ; and some of the old are dropping off. Continue. 12th. Complained of much general pain, which has been succeeded by a fresh eruption of yaws. Continue. 15th. Sent to Negro Point for the benefit of sea-bathing, and continued there till the 20th, during which the exhibition of the nitrous acid was neglected ; the disease consequently stationary. 20th. Ordered three drachms in a quart of water daily. 28th. In every respect better : most of the sores have dried up and sloughed off. Continue. October 3d. A considerable eruption of prickly heat, attended with much flushing of the face, and pain and throbbing in the temples : for the last symptom a blister applied behind each ear. Discontinue the nitrous acid. 6th. The above symptoms have continued, and in addition, is sensible of a pricking pain in the
left

left breast, with cough; bled to twelve ounces, and a little paregoric elixir at bed-time. 9th. The symptoms of inflammation being removed by the remedies ordered, began the nitrous acid again; the remaining yaws beginning to slough. 11th. All signs of super-oxygenation have disappeared. Continue acid. 17th. Only two yaws remain. Continue. 18th. Cough flushing, &c. returned, but not troublesome. Continue. 20th. Together with cough, &c. on getting out of bed this morning was totally blind for the space of five minutes; only one yaw remaining. Discontinue the acid. 26th. The last yaw dropped off last night. About the beginning of November discharged free of complaint, but directed to go on duty for some time to Negro Point, for the benefit of sea-bathing.

Dr. Davidson, of Martinico, has favoured me with the following Extract of a Letter, received by him from Dr. Herries, of St. Vincent:

“ I have given the nitrous acid diluted as you directed, a fair trial in two cases of yaws, and one of lues, in all which it has surpassed my most sanguine expectations. They had not taken it more than four weeks, when, to every appearance,

ance, they were perfectly well ; but I thought prudent to continue it a week longer. I have three patients with the yaws now, but not yet in a state to take the nitrous acid, when they are I shall prescribe it for them, and will acquaint you with the result." 29th November, 1798.

Several other cases have occurred, in which the efficacy of this medicine has been equally conspicuous. Trials have been made in Demerary in yaws, which have hitherto failed, partly from the impurity of the medicine originally, and partly from an injudicious exposition of it to the sun.

LEPROSY.

CASE I.

A Negro Woman, at Fort-Royal, Martinico, under the immediate charge of Dr. Davidson. " Before she had begun the use of the oxygenated muriate of potash, the leprous spots had rapidly spread, and became of that deep colour which the nitrous acid communicates to the skin ; she complained also of intolerable burning pain in them ; a difficulty of breathing, and
pain

pain in her chest, A fortnight after she began taking the medicine, at the rate of thirty grains in the day, the spots began to resume the natural colour of the skin ; the pain in the chest ceased ; her tongue became white. A purging brought on by the muriate retarded the progress of the cure ; but by perseverance, and the addition of opium, that has been effected in about six weeks."

CASE II.

By the same. " *Mr. D—*, junior, of St. Pierre's, is about thirteen years of age, of a fair complexion, and slender make. His disease began with spots of a yellow colour at first, upon different parts of the body, and upon the face and lips, which gradually became larger, and of a deep brown, inclining to black ; the ears thickened and swelled, the countenance of a horrid grim appearance ; a stiffness of the tendons of the thighs, and inability to walk. He has taken the nitrous acid about three months. The change has been remarkable. About a fortnight ago all the spots had nearly disappeared ; but omitting the medicine, from its having been expended, the spots again returned, and are now slightly yellowish. I saw him in St. Pierre's two days ago ;

ago; he was then attending a merchant's store. His appetite is good, he rests well, his body regular. His mother observed, that after taking the medicine about a month, his cheeks became of a florid red, and also the spots became of a deeper red upon the body. He has begun the nitrous acid again, and I am in hopes that he will soon be restored to health, which I must confess I had little hopes of, when I first took him in hand."

CASE III.

A medical friend of St. Christopher's has informed me very lately (January 21, 1800), that the nitrous acid, in one case of Leprosy, produced a surprizingly beneficial effect; but not having a sufficient quantity of it by him, he was not able to prosecute the cure to completion.

The reader may advantageously compare these facts, on which every dependence may be placed; with M. De Gimbernats's case of Leprosy, cured by the inhalation of oxygenous gas. Dr Beddoes' Considerations on Factitious Airs. Case 33.

A Curious Case of Spasmodic Affection of the Face, cured by the Oxygenated Muriate of Potash.

Madame R——, a French free mulatto woman, of Fort Royal, aged 57, and of a spare habit, had been, after the disappearance of the menses, subject for eight years to the most excruciating attacks of nervous headach. Every remedy in the anti-spasmodic and tonic way had been in vain employed by her French physicians. At length, about two years ago (eight after the commencement of the nervous headach), that complaint became suddenly converted into a singular spasmodic affection of the muscles of the face, more distressing even than the headachs had been. During the paroxysms of this spasm, which returned repeatedly in the course of the day, and more especially after using the jaws in the mastication of food, or after sneezing or other violent exertion, all the muscles of the face, but particularly those of the upper lip, of the nose, and of the cheek, were thrown instantly, and without any perception of approach, into a state of rigid constriction, by which the whole of the parts mentioned were drawn up towards the eyes, and produced a most horrible aspect of visage.

visage. The jaws were close shut as in tetanus, and the suddenness of their junction often repeated, had destroyed many of the teeth. The distress of the unhappy patient was inconceivable during this state. It generally lasted from two to five minutes, when the muscles suddenly relaxing, some cessation of extreme torture was experienced. The certainty of exciting this spasm by eating or speaking, had induced the patient to avoid food as much as possible, and she generally remained silent, unless particularly addressed. This excessive abstinence, by producing an extreme meagerness of body, increased the general horrible appearance of the patient. This was her situation in the month of September, 1798, when Dr. Davidson and myself first saw her. The inutility of every remedy hitherto employed, bark, steel, blisters, cold bathing, electricity, and the introduction of setons on one hand, and antiphlogistics on the other, which had been alternately exhibited by the French physicians, left us little to chuse. It was at this time we had made a variety of trials of the efficacy of the oxygenated medicines; and the general appearance of this patient, as well as the particular character of the spasmodic affection, and of the circumstances which preceded its appearance,

affording room for belief, that her complaint proceeded from a disoxygenation of the system, we determined on having recourse to the oxygenated muriate of potash. We made choice of it in preference to the nitrous acid, principally from its being divested of taste, and from the small compass of the dose, circumstances of importance in this case. She began this medicine on the 6th of September, in the quantity of thirty grains per day. The effect was wonderful indeed. No other remedy whatever was used, and at the expiration of three weeks' continued exhibition, she was entirely free of complaint, her appetite entirely, and strength in a great measure returned, the features of her face were restored to their natural form and character, and she came down without assistance to Dr. Davidson's house, to thank him for his attention to her. At this critical period the whole of our oxygenated muriate of potash was expended; and unfortunately, the weather being extremely rainy, and the situation of this woman's house, low and damp, she experienced a relapse about four months after this astonishing change. Bitters, the foetid gums, æther, &c. were substituted, but no relief arose from the use of them; at length I received a considerable supply of the oxygenated muriate from

from England. The medicine was again exhibited, and after some time produced its former wonderful effect; and fortunately, from the ability to continue the use of it, this effect has been permanent. It is remarkable, that in this, as in all other diseases in which the oxygenated muriate of potash has been exhibited, the symptoms are for some time encreased in violence; but the medicine being persevered in, it at last cures. Madame R—— felt her teeth *agacées*, or set on edge by the muriate, the gums became florid, and the tongue white; and the flow of saliva was greatly increased.

Is this the disease described by Dr. Haighton, (Med. Records and Researches, 1798), and cured by the division of the second portion of the 5th pair of nerves? It is the first case of the disease I have met with; but the result certainly encourages the employment of the method made use of in the cure. M. André called it “*Tic Douloureux*.” The patient, in the present instance, applied the word “*Tiraillement*,” to express her feelings during the spasmodic paroxysm; perhaps fully as significative of the peculiar mode of morbid action.

APPENDIX, No. VI.

A short Account of the Epidemic Polypus at Grenada, in 1790. See Part II. Ch. iv. S. 2.

THE situation in which this singular disease appeared, is rather peculiarly circumstanced. The foreground is the sea, perfectly open, with an extensive and burning beach of sand; on the left is a hill of considerable and steep ascent, the base sides of which, in conjunction with the reflecting surface of the sea, produce in dry seasons an immense degree of heat: on the right the view is limited by a mountain of great height and magnitude; the back ground is a marsh extending from the sea to the mountains, and formed chiefly by water rushing from a narrow stony ravine, and dammed up by a beach rendered impenetrable by the surge: from this marsh vapours of a very deleterious nature continually exhale, and this was particularly observable in the month of October of this year, on account of the trees and brush-wood which hitherto had covered it, being cut away in order to drain the marsh. Immediately behind the
marsh

marsh the ravine begins, and runs back between the hill and mountain, in the form of a funnel, gradually rising for upwards of a mile. Through this ravine there is a continual current of wind of an uncommon degree of coolness. The negro houses of the plantation are built on the hill on the left, chiefly on its slope, and towards the edge of the marsh. The negroes were consequently at once exposed to excessive heat, a cold chilling current of air, and the miasma of the marsh. Their diet was chiefly composed of vegetable food. They had been employed immediately before the appearance of the disease in question, in clearing the surface of the marsh, and in holing land for the reception of cane-plants. Like all other negroes placed in similar situations (marshy), they were much given to the destructive habit of eating a species of pipe-clay, very abundant in Grenada.

The disease made its appearance on the plantation Grand-mal, about the end of September, or beginning of October; was most prevalent towards the close of the latter month, and disappeared totally in November. The whole number of sick might have been forty, of whom seven died. Its commencement was marked by no distinguishing symptom; but soon after the pa-

tient complained of pain at the pit of the stomach
 and head, and difficult respiration. These pains
 were attended with a dry skin, small quick pulse,
 and slight frequent dry cough. No febrile heat
 accompanied these symptoms; on the contrary,
 the surface was at this period remarkably cool;
 but a heaviness and dullness of eye, a melancholy
 or depression of spirits, and features strongly ex-
 pressive of anxiety, were constant attendants.
 The state of the patient was thus characterised
 for three days. At the expiration of that period,
 the pulse became extremely quick, 120 to 140,
 and intermitted, attended with a penetrating
 pungent heat, which produced a pricking sensa-
 tion on the hand of the person feeling the pulse.
 But this state of the pulse and heat, as well as
 the pains, anxiety, and other distressing symp-
 toms, now also intermitted, or rather the disease
 assumed something like an intermittent form,
 the intermission of it may be so called, continu-
 ing eight or nine hours. During the paroxysm,
 the struggle for breath, the aggravation of all the
 other symptoms, and *the very quick, interrupted,*
and evidently visible, as well as audible palpitation
of the heart, produced a scene of uncommon
 horror. The paroxysm was succeeded by a cold
 clammy sweat, and a state of approaching syn-
 cope,

cope. The second paroxysm generally put a period to the existence of the patient. The disease was also distinguished during this latter stage, and even for some time previous to its commencement, by a constant or almost constant disagreeable clammy sweat overspreading the face, the upper extremities and the body as low down as the scrobiculus cordis, all below remaining arid and parched in a most remarkable degree. The disease seemed sometimes inclined to terminate by metastasis; one instance of this was remarkable, wherein a spontaneous absorption of the lymph deposited in the heart, and a deposition of it in the left arm and left thigh, took place. The patient, in this case, after labouring under all the symptoms peculiar to the disease before the intermittent period, found himself all at once, and without an evident cause, relieved of them; but he perceived at the same instant an excruciating pain a little above the elbow, and nearly about the middle of the thigh. He continued ever after absolutely free of all the symptoms of the polypus; but they were succeeded by a large abscess in the parts in which he felt the pain. That in the arm disappeared gradually, but the other became so large as to occupy the whole of the under part of the thigh.

thigh. The cure was effected by passing a seton through the whole length of the tumor ; by the use of two dozen of Madeira wine, a large quantity of bark, and a calomel pill, with opium three times in the day. The audibleness of palpitation may be considered as exaggeration ; but in one instance particularly, the gentleman (Mr. Mac Sween), to whom the negroes belonged, heard distinctly the palpitation, although in an adjoining room.

What mode of practice did so extraordinary a train of symptoms indicate ? I could fix on none till dissection instructed me. Having no suspicion of the heart being the seat of this uncommon malady, I did not examine that organ in the two first bodies I opened ; but finding all the other viscera, and the brain in a state of health, I found myself still unequal to account for the extraordinary symptoms the patients had been afflicted with. At length, on opening the third body, I examined the heart, and discovered what I conceived might be considered the cause and seat of the disease. In the right ventricle I found a polypus which extended considerably into the pulmonary artery. On extracting it, it measured exactly two feet and two inches in length ; and the body of it contained in the ventricle, two inches in breadth.

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In the fourth body there was a very large polypus in the right and left ventricle, besides one in the right auricle. The hearts of the 5th, 6th, and 7th, were circumstanced precisely similar; and in the five, except one, where the lungs were morbidly affected, no other morbid appearance of any description could be perceived. Did these extraordinary circumstances justify the appellation, epidemic polypus?

After a variety of ineffectual attempts to cure this disease, I determined on the following, and found it successful: From the consideration of the circumstances contributing to the production of the disease, so far as they were discovered; of the features of the disease itself; and of the morbid changes observed in the dead bodies; it may be fair to conclude, that a laxity of fibre, a want of due cohesion in the mass of blood, and a consequent deposition and accumulation of coagulable lymph in the cavities of the heart, where the various valves and columni favour such accumulation, produced polypi, an interruption, and at length a total stop to the circulation. Having this view of the disease, it was manifest that such means as might prevent deposition and accumulation of coagulable lymph, or destroy it, should it have happened, in the first instance; and afterwards

wards restore tone to the fibre, would cure the disease. The action of mercury on the absorbent system I had for some time been acquainted with, and its probable efficacy in that way here, readily occurred to me. My mode of treatment, therefore, was this: The moment I could distinguish the disease, I bled in order to render circulation through the lungs and heart less difficult, and obstructed. This evacuation was never repeated without great caution, and the most evident necessity. After this I gave calomel in doses of five grains, guarded with opium, every fourth hour, and continued it till salivation was excited. Under this treatment I lost not a single patient; the fatal terminations having taken place before I could carry it fully into execution.

A pneumatic physician would probably refer all to the hydrocarbonate of the marshy exhalations, and attribute the cure to the oxygene disengaged from the mercury, assisted by the stimulus of the metal. Whether such might be correct reasoning or not, I am certainly induced to consider the history taken altogether as an illustration of the theory of the curative action of mercury in the system; and as such I have judged it worthy of the reader's notice.

APPENDIX, No. VII.

Experiments to ascertain the Degree of Animal Heat within the Tropics, with Observations resulting therefrom.—The Degree of Morbid Heat, and the Efficacy of Cold Bathing in the Reduction of it.
(See Part I. c. ix. Part II. c. ii. Sect. x. and Part III. c. v.)

OUR knowledge of the laws of the animal œconomy, imperfect as it is, is sufficient to enable us to conclude that a certain degree of heat is necessary for the purposes of animal life; and as we perceive no essential difference in the circumstances of (human) animal life, however different the temperature of the climate may be in which life is maintained, we are further induced to conclude that this necessary degree of heat is universally the same. The diversity of climate, however, has given origin to an opinion, that animal heat is subject to a diversity nearly similar; or that, on a change of climate, an increase or diminution of heat may be perceived in the bodies of persons so changing; and that that heat does
not

not acquire the degree peculiar to the climate to which the change has been made, until habit or assimilation has produced it. That this opinion has any thing to support it further than assertion, does not appear, so far as I am acquainted with the discussion of the subject : and, therefore, as hitherto, no actual experiments or trials have been made to ascertain the truth either way, the point must still be considered as undecided. To throw light on this, as well as to establish the principles on which depends the preparation of the human frame for the application of unaccustomed heat, whereby the laws of the animal œconomy may not sustain derangement in the assimilation of the constitution, I have judged it proper to lay before the reader the results of various thermometric experiments on human subjects. In the pursuit of this object I have taken the thermometric heat of persons newly arrived from northern climates, supposed to possess a much greater degree than the assimilated to, or native inhabitants of the torrid zone ; and that of persons after various periods of residence. With the same view I have taken the heat of an equal number of negroes newly arrived from Africa, and of others long resident in, or natives of the West Indies. Here, perhaps, trials may be considered
as

as unnecessary, both regions being under nearly the same parallels of latitude, and consequently subject to nearly the same atmospheric temperature. But the ascertaining the point even among the negro race has its importance, since it prevents fruitless discussions; and may be considered as an useful step towards pointing out the means of prevention of endemic diseases, and elucidating the cause of the negro's exemption from the action of pestilential infection and contagion, as long as they reside within the tropics.

Should it appear that animal heat is the same within the tropics as in northern climates, a subject of curious discussion may arise from the consideration of the constitution of the atmosphere within the former, in relation to that of the latter. In the atmosphere of the torrid zone, although the proportion of vital air may perhaps more than double that which enters into the composition of the atmosphere of cold or temperate climates; and although, consequently, a degree of heat nearly proportional, may be evolved in the persons of men respiring this super-oxygenated medium; yet the transpiration being also proportional, no injury takes place, unless the animal œconomy has sustained derangement by the imprudence or unhappy, but necessary circumstances of

of

of the person. The truth of this is observed and ascertained in the disagreeable sensations consequent upon checked perspiration ; the pleasurable ones which succeed a flow of perspired fluid ; the uniform health which accompanies the latter state ; and by the efficacy which the evaporation of the perspired fluid possesses, in the reduction of accumulated heat, by exposure to a current of air, within the tropics. In the consideration of this constitution of the inter-tropical atmosphere, a wide field for admiration of the wisdom and benevolence of God, is presented to us. The large proportion of vital air is, perhaps, necessary to support life in regions exposed, by their relative situation, to an immense solar heat ; for, without it, a continual and excessively debilitating waste, without any proportional supply of *pabulum* would take place ; whilst the deleterious consequences of a great accumulation of heat are at the same time provided against by the greatly increased volume of transpiration, and the constant action of a strong current of air from the sea, which excites evaporation and absorption of heat. Where men are so circumstanced as to be excluded from the influence of this powerful agent (sea breeze), heat accumulates, and, in conjunction with other morbid causes, hydrocarbonic gas, perhaps, permits

mits a very imperfect enjoyment of health. Of this, the southern states of North America, during the summer and autumn; and Guiana, in South America, during the whole year, more particularly the hotter and wetter months, present striking illustrations. In these regions, the country is little elevated to an immense extent from the sea; the salutary influence of the sea-breeze penetrates only so far as the native forests permit; and the persons of the inhabitants are often so charged with heat, as to oblige them to have recourse to continued immersion in water for relief. Many of the inhabitants of the middle and less perfused tracts of Georgia, have assured me that they have often experienced the comforts of a watery bed (wooden troughs filled with water), and were there not facts sufficient to establish the actual existence of so extraordinary a mode of repose, the temperature of the atmosphere in the warm months 96° — 105° with a prevailing stillness of it, are ample manifestations of the necessity for resorting to it. The sea coast of these countries being differently constituted, is universally healthy; and no country in the world can exceed in salubrity of atmosphere, the islands and adjoining coast of South Carolina and Georgia, and the east sea coast of Demerary.

That the accumulation of heat in the persons of men within the tropics is more than double that which takes place in northern climates, will appear from the following considerations: Relying on the accuracy of the eudiometric experiments made on the atmospheric air within the tropics, which make the proportion of oxygene to vary from .55 to .56; and extending our consideration of them to the rule established by the experiments of M. Lavoisier & de la Place (*Mémoires de l'Acad. des Sciences*), respecting the quantity of heat communicated during respiration, we shall be astonished to find that the quantity communicated during respiration, in a hot or tropical climate, is to that, during the same action in a cold or temperate one, nearly as 1 is to 2, or 2.3: for, granting as established facts—1st. that the quantity of atmospheric air inspired in any given time, has been ascertained, and may be equal to 720 cubic inches in a minute; 2d. that oxygene is the only constituent portion of atmospheric air, changed by respiration; 3d. that this is converted into carbonic acid gas, as well by respiration as by combustion; 4th. that from this thus generated, equal quantities of heat are evolved; and 5th. that the quantity of heat daily evolved in the lungs of an ordinary man in health

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in England and France, is capable of dissolving 74.2789 lbs. of ice : then, the quantity of heat evolved during respiration, daily, in the lungs of an ordinary healthy man in a tropical climate, may be thus expressed :

1ft.

Oxygene	lbs.	Carb. Acid Gas	Oxygene	lbs.	Carb. Acid Gas	
.27	:	3.9697	:	.60	:	8.8215

Consequently 2d.

lbs. Carb. Acid Gas	lbs. Ice	lbs. Carb. Acid Gas	lbs. Ice			
3.9697	:	74.2789	:	8.8215	:	165.0632

But if no allowance is made for heat carried off by expiration and evaporation, or the formation of vapour, the term will stand thus :

3d.

lbs. Carb. Acid Gas	lbs. Ice	lbs. Carb. Acid Gas	lbs. Ice
3.9697	107.2	8.8215	238.2

or the quantity evolved will be to that in a cold climate, as 1 to 2.3. Hence the fatal consequence of irregularity which may check perspiration, or prevent a sufficient dilution, evidently appears ; and the efficiency of heat thus accumulated, as a predisposing cause of disease, is equally manifest. (See Mém. de l'Acad. des Sciences. Fourcroy's El. vol. i. ch. v. Menzies on Respiration. Higgins's Philosoph. Ex. and Conversations, &c

I shall now proceed to state the result of thermometric experiments on various descriptions of persons, made in Demerary, the latitude of which is $6^{\circ} 30'$ north.

1. White persons newly arrived from a cold climate, Great Britain and Ireland, and totally unassimilated to the tropical climate. The thermometer carefully placed, and secluded from the influence of currents of air, in the arm pits, of twelve young men, whose ages varied from 16 to 28 years, and in perfect health, gave the following results, the pulse being at the same time as stated.

No.	Heat.	Pulse.
1	99°	78
2	98	75
3	98	—
4	98	75
5	94	76
6	93	72
7	98	108
8	98	92
9	94	72
10	99	88
11	98	92
12	99	88

Mean heat 96° . Mean pulse 82.

2. White

2. White persons, whose periods of residence in the tropical climate varied from four to twenty years, and in perfect health, subjected to the same trial, gave the following result :—

No.	Heat.	Pulse.
1	94°	88
2	96	—
3	90	68
4	94	74
5	98	68
6	93	54
7	97	74
8	96	74
9	97	64
10	97	72
11	98	64
12	99	64

Mean heat 96°. Mean pulse 70.

3. Twelve robust negro men, in perfect health, natives of the Gold Coast of Guinea, in Africa, lat. 5° 10' N. only a fortnight in the country, being subjected to the same trials, gave the following results :—

No.	Heat.	Pulse.
1	98°	80
2	97	70

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No.

No.	Heat.	Pulse.
3	98°	84
4	97	96
5	99	96
6	98	92
7	96	104
8	96	92
9	98	112
10	97	72
11	98	112
12	98	80

Mean heat 97.5°. Mean pulse 88.

4. Twelve robust negro men, whose periods of residence in Demerary varied from four to twenty years, and in full health and vigour, being subjected to the same trials, gave the following results:—

No.	Heat.	Pulse.
1	99°	100
2	96	78
3	94	78
4	96	92
5	98	90
6	95	60
7	97	68
8	98	92

No.

No.	Heat.	Pulse.
9	97°	108
10	96	108
11	96	86
12	98	80

Mean heat 96.5°. Mean pulse 82.

5. Twelve robust, healthy negroes, creoles, or natives of Demerary, whose ages varied from sixteen to thirty, being subjected to the same trials, gave the following results:—

No.	Heat.	Pulse.
1	98°	70
2	99	66
3	98	84
4	98	80
5	98	100
6	98	92
7	98	102
8	98	78
9	98	88
10	97	100
11	98	90
12	98	80

Mean heat 98°. Mean pulse 85.

6. I subjected infancy, childhood, and old age to the same trials, in a few instances, and the following were the results:—

	No.	Age.	Heat.	Pulse.
White	1	6 weeks	99°	128
Ditto	2	15 months	98	128
Ditto	3	30 months	98	132
Black	4	42 months	98	112
Mulatto	5	4½ years	97	112
Mussee	6	5 years	98	112
Black	7	80 years	98	94

Mean heat 98°. Mean pulse 116.

The general result will therefore be—1. That the European, whether assimilated or unassimilated to the tropical climate, possesses, in the tropical climate, in health, one and a-half degrees of heat less than in his native country; and nearly two degrees less than the Negro. 2. That the unassimilated Negro of Africa, and the Creole Negro of South America, born under nearly the same parallel of north latitude, possess nearly the same degree of heat. 3. That the assimilated Negro of Africa, in South America, possesses nearly the same degree of heat the assimilated European does; but one degree less than the unassimilated Negro of Africa, and one degree

gree and a half less than the Creole Negro of South America. 4. That the circumstances of extreme age and extreme youth, make no difference in the temperature of the human body in a tropical climate. And 5. That the mean heat of sixty-seven persons of different countries, different climates, different temperaments, different ages, and of every shade of colour from white to black, is 97° , or that which is the mean heat observed in the human body in health and vigour in Great Britain.

It will be observed in the foregoing statements, how little the pulse is affected by the degree of animal heat during a healthy state of the person. This is certainly a fact in common circumstances of life; but, on the application of cold, a very different state of pulse is observed; for then it is acted on proportionally to the diminution of heat, or perhaps more properly to the quantity of sedative power exhibited. The following observations on my own person manifest this:—

November 6th, 1798. Nine P. M. my pulse was 72, and heat (ascertained by placing the bulb of the thermometer under my tongue), 96° .

November 7th. After getting out of bed, six A. M. Pulse 64. Heat 97° .

Nov.

Nov. 7th. At noon, violently heated or agitated by exercise (atmosph. heat 76°) pulse 96. Heat 99° . After undressing, and throwing water of the temperature of 72° on my face and arms, the heat was 97° , and pulse 76.

———— At midnight, after long reading and sitting, pulse 54, heat 96° .

November 8th. At six A. M. just out of bed, pulse 72, heat 97° .

———— At one P. M. (atmosph. heat 74° . Constant heavy rain and wind, thunder and lightning), my skin perfectly dry, and my feelings very uncomfortable, pulse 64, heat 98° ; a proof also of accumulated heat.

———— At ten P. M. my feelings the same, and skin equally dry, (atmosph. heat 74°), Pulse 66, heat 98° . The palms of my hands felt excessively hot, and had a prickly sensation, such as takes place after hyper-oxygenation.

November 11th. At noon (atmosph. heat 83°), skin dry and feelings unpleasant; the palms possessing the same sensation as on the 8th, pulse 62, heat 98° .

November 12th. At noon, in the same circumstances as yesterday, from want of exercise; pulse 64, heat 99° . (Atmosph. heat 83°).

November 14th. At noon, and after considerable

able exercise (atmosph. heat 85°), pulse 66, heat 100° .

November 15th. At noon, and under the same circumstances the same.

—— 16th. At noon, under an equable perspiration, without exercise; pulse 72, heat 98° .

—— 17th. At two P. M. after a walk chiefly up hill, from Fort Royal to my house, distant three miles, violently agitated; pulse 102, heat 100° ; immediately after I undressed, and bathed in water of the temperature of 80° , heat then 98° , (atmosph. heat 88°).

—— 18th. At nine A. M. in a state of tranquillity, a young gentleman, only five months in the climate, had pulse 70, and heat 97° ; myself at the same time had pulse 76, heat 99° , (atmosph. heat then 84°). At noon, after a long walk, and violent agitation in the sun, (atmosph. heat then 86° in the shade, and 130° in the sun) the former had pulse 76, heat 98° ; myself, pulse 76, heat 101° ; bathed, heat 98° . I have since repeatedly observed the same effects from the same causes, both at Martinico and at Demerary.

Morbid heat appears, under certain forms of fever, much greater within the tropics than in Europe. A variety of observations on the degrees

degrees of morbid heat in the simple remittent and formidable yellow remittent fevers, prove that, during the inflammatory state or stage of the first, the heat varies from 99° to 105° ; and during that of the second, from 102° to 112° ; and that, during the remissions and low comatous state, the heat sinks frequently to 93° and 94° . What it is immediately before death I have not ascertained. It is not often, however, very high degrees of morbid heat occur; and the 112° has been ascertained in only two cases. One of these was that of a soldier of the 39th regiment, under the care of Dr. Dunkin, of Demerary; robust, florid, and in the prime of life, labouring under the symptoms of the higher grade of yellow remittent fever. On the 3d day, the heat indicated by the thermometer was 112° , pungent, and leaving an unpleasant prickly sensation on the fingers; the pulse at the same time was about 140. Determinations to the brain and liver were evident, and the delirium fierce. On the 5th day he died, the surface overspread with vibices. The other was a negro boy belonging to the same gentleman. On the second or third day the heat was 112° : the patient recovered.

Cold bathing, chiefly by affusion, has exhibited great effect in diminishing morbid heat, within
the

the tropics. To illustrate this by a detail of cases is not necessary, and would be tedious. I shall therefore request the reader's attention to only one or two in which the thermometric heat was carefully observed and noted by the gentleman in whose employ the patients were. In the first, a case of yellow remittent, it may be difficult to determine whether the cure was effected by cold bathing or mercury, or by the combination of both. The former, it appears, however, from the changes which took place after the bold administration of calomel, would have probably proved a precarious remedy without the powerful aid of the latter. It is proper to observe, that certainly many cases of both fevers, particularly the latter, have occurred, in which a fatal termination has been produced by the injudicious employment of the cold bath, that is, applying it at the close of the exacerbation; for then nature, instead of being seconded, is interrupted and deranged by it. This, however, is not observed to take place in the low stage of the yellow remittent fever; and because then, nature demands every assistance which can be given to her, the action of the remedy at this period operates a different effect; it stimulates the almost prostrate powers of life, and either alone or in conjunction

conjunction with mercury, renovates them, and gives such vigour as enables them to overcome the morbid cause.

CASE I.

William Gow, aged twenty-two, robust and florid, by trade a carpenter, a native of Scotland, and only five months in Demerary, had been seized on July 29th, 1799, with the usual symptoms of yellow remittent fever. This and the two following days, exacerbations, violent every afternoon, with imperfect remissions in the morning—purgative pills had been exhibited.

August 1st. “ This morning, his skin natural, but pulse quick ; began to give him bark. After giving three doses, stopped, as he vomited each dose. At eleven A. M. pulse 101, thermometric heat 104. At one P. M. pulse and heat the same ; poured over him about six gallons of water, in which a pint of salt was dissolving. He was afterwards wrapped in a blanket ; pulse 100 ; heat 102. A copious perspiration immediately followed, which, however was checked in about two hours, by moving him from the blanket into a hammock. At six P. M. being very restless, pulse 100, and heat 100, two pailfuls of water, with salt in the act of solution, were again thrown
on

on him, by which he was much relieved, and perspired copiously until ten P. M. Frequent and copious stools attended with griping. 2d. Very restless all night; had about a dozen stools, with much griping. At six A. M. heat 100, pulse 101; five large pailfuls of sea-water were dashed on him, sitting in a tub; when returned to bed, pulse fell to 98, and heat to 99°; copious perspiration ensued; slept a little. At noon, heat 102°, and pulse 100; the same quantity of sea water was again used as in the morning; heat fell to 98°, and pulse remained at 100; copious perspiration, as before, for three hours. At six P. M. pulse 101, and heat 102°; the same quantity of water dashed on him as before; immediately after, heat 96°, but soon rose to, and continued at 98°, pulse 98; perspiration as before; slept a little, and felt his headach, of which he had before complained, a little relieved. 3d. Slept much in the night; head easier, and generally refreshed. At six A. M, heat 100°, and pulse 99; the same quantity of water dashed over him, and remained a few seconds immersed in the water; immediately after being taken out, heat only 92°, but in ten minutes rose to 98°, and remained so; pulse 92. His feet continued cold for near an hour, and the application of bottles of hot water to

to the soles required to restore the natural heat to them ; nor did perspiration commence for near two hours ; it then became copious, and did not cease till eleven A. M. ; he then slept, head very considerably relieved. At one P. M. pulse 116 to 120, heat 102° ; bathed as before ; after bathing, heat 101° , pulse 105. At six P. M. pulse 105, heat 101° ; bathed as before ; after which, pulse 100, heat 94° , when taken out of the water, but in ten minutes remained stationary at 98° . At bed-time twenty grains of calomel, with two grains opium, in two pills, taken ; a blister applied to the back of the neck ; and mercurial frictions employed for the first time ; stools not so frequent as yesterday. 4th. Slept a great part of the night ; head relieved by the blister ; no stools. At six A. M. heat 101° , pulse 92 ; bathed as before ; after which, heat remained stationary at 98° , and pulse 86 ; mercurial frictions before bathing, and in the forenoon. Two P. M. heat 101° , pulse 100 ; bathed ; after bathing, heat 99° — 100° , and pulse 98. Six P. M. heat 102° , pulse 108 ; bathed ; after which, heat 98° , pulse 100 ; mercurial frictions used repeatedly between the periods of bathing ; four stools to-day ; at bed-time, twenty grains calomel, and two grains opium. 5th. Had much refreshing sleep

sleep the former part of the night, afterwards
 much disturbed. Six A. M. heat 103° , pulse
 114; bathed; after which, heat 100° , pulse 110,
 and fluttering; had a glass of Madeira wine;
 tongue dry, and much thirst. Eight A. M. pulse
 124; took four grains James's powder, with
 seven drops laudanum, which were retained. It
 is to be understood, that after each bathing the
 perspiration has been copious, and has continued
 from two to three hours. Ten A. M. tongue
 slightly moist, and pulse 120; ordered a clyster
 of bark and port wine every third hour. Two
 P. M. heat 102° , pulse 120, and feeble; the
 bath as before; after which, heat 100° , pulse
 110, but very indistinct; immediately after the
 bath, administered a clyster of bark and port
 wine, but it occasioned great pain, and was in-
 stantly rejected; in the afternoon, began to give
 small doses of yellow bark and wine and retained
 eight. At six P. M. heat 100° , and pulse very
 feeble and indistinct; the bath omitted, as he
 seemed unable to bear it. 6th. Six A. M. heat
 98° , and pulse 100; bath still omitted; had three
 doses yellow bark and wine; at noon very low;
 pulse feeble and indistinct, and skin rather
 clammy. Two P. M. pulse feeble; heat 98° ;
 VOL. II. I i bathed;

bathed ; after which, pulse 104, heat 100°. Ordered spiced wine after bathing, and as often as he can take it ; and every third hour, a clyster, composed of two tablespoonfuls of bark, two teaspoonfuls of laudanum, and two drachms of calomel, mixed with as much thin starch of arrow-root, as might make the whole sufficiently liquid ; blisters applied to the inside of each thigh ; the clyster administered, for the first time, at three P. M., and retained. Six P. M. pulse 104, and heat 100° ; bath repeated, after which, pulse 98, and heat 100° ; clyster repeated every third hour regularly, and mercurial frictions to every absorbing surface ; the spiced wine also persevered in. 7th. Retained all the clysters ; and blisters dressed with mercurial ointment. Six A. M. pulse 104, heat 100° ; bathed ; after which, pulse 104, and heat 100° ; the clysters to be repeated as yesterday ; appears more lively, and feels himself easier ; at noon, pulse 108, heat 101° ; bath repeated ; after which, pulse 98, heat 100°. Six P. M. heat 99°, pulse 96 ; bathed ; after which, heat 99°, pulse 96. The clysters having been uniformly retained, a laxative injection administered at nine P. M. which procured two stools ; after which, the bark ; mercurial clysters repeated

as before ; bath also employed during the night. 8th. Six A. M. pulse 88, heat 100° ; bath used ; after which, heat 99° , pulse 84 ; appears much more lively, and feels himself, he says, better ; clysters and bath repeated every fourth hour ; the heat at 99° before, and 98° after each bath, and pulse regularly 88. At nine P. M. the laxative injection repeated ; the bath and bark, clyster, without calomel, continued every hour. 9th. Rested well all night, and perceived, for the first time, the sensation of hunger this morning ; appears entirely free from fever ; pulse from 86 to 88, and heat 98° ; the bath, and bark clysters continued ; mercurial frictions discontinued ; his mouth does not appear to be at all affected by the mercury. 10th. Bathed three times in the course of the day, a bark clyster after each bathing ; his appetite good, and appears in a state of convalescence. 11th, 12th. Continued the bath morning and evening. 13th. Walked out and bathed in the canal. His recovery after this was rapid."

" N. B. The temperature of the water used in bathing, was from 76° to 80° . After the 6th, a sheet made use of, instead of a blanket, the perspiration occasioned by the latter having been too copious.

Dr. Ord, who superintended the treatment in the above case, has stated the quantity of mercury employed, as follows :

	grs.
Took into the stomach	64
—— by clyster, and retained	2040
	2104 or 4 oz. 3 drs. 4 grs.
Employed in frictions sixteen ounces of the stronger mercurial ointment, which, by the London Pharmacopœia, may be equal to, of triturated mercury	- - -
	4448 or 9 oz. 1 dr. 8 grs.
	6552 or 13 oz. 4 drs. 12 grs.

CASE II.

By the same. “ Sept. 13th, 1799, *Alexander Stewart*, aged twenty-one, and about two years in the West Indies, during which time he had been occasionally subject to fever, was this morning, when attending the negroes at their work, in a very hot situation, seized with giddiness and general uneasiness, and puked several times. Returned to his house in the forenoon with fever upon him ; perspired in the afternoon, which relieved him a little ; at bed-time took ten grains of calomel. 14th. Took some jalap pills this morning (about thirty grains) which operated three

three or four times ; appeared free from fever during the forenoon, but in the afternoon restless and very uneasy. Skin dry, and pulse quick. In the evening took ten grains of calomel ; had a restless night. 15th. Slight fever this morning, attended with constant vomiting of yellow and green fluid. Fever increasing, about ten o'clock in the forenoon gave him one of three pills, composed of ten grains of calomel, and one grain of opium. At one P. M. fever considerably increased, with great restlessness and anxiety ; pulse 104, heat 102° . Four pailsfull of water of the usual temperature (76° — 80°), were now dashed over him. He felt instantly much relieved ; the irritation of stomach immediately left him ; restlessness and anxiety entirely gone. In ten minutes, pulse 90 and heat 98° ; and soon after a gentle perspiration broke out all over him. In the evening, when the perspiration ceased, he appeared free from fever, skin being moist and natural, pulse 80, and heat 98° . Soon after the bath he took the remaining two pills of calomel and opium ; rested well during the night. 16th. Took six doses of bark ; about noon complained of restlessness and general uneasiness ; pulse rather quicker than natural, and heat also slightly increased ; towards evening a
gentle

gentle perspiration relieved him, and he passed a good night. 17th. Perfectly easy ; took six doses of bark ; pulse and heat natural ; able to sit up. The calomel not having affected his mouth, five more grains were given in the evening, obstructions in some of the viscera being apprehended from previous frequency of febrile attacks. 18th. Gums swelled, and mouth painful this morning ; well in every other respect ; took four doses of bark. 19th, 20th. No complaint but soreness of his mouth and inability to eat."

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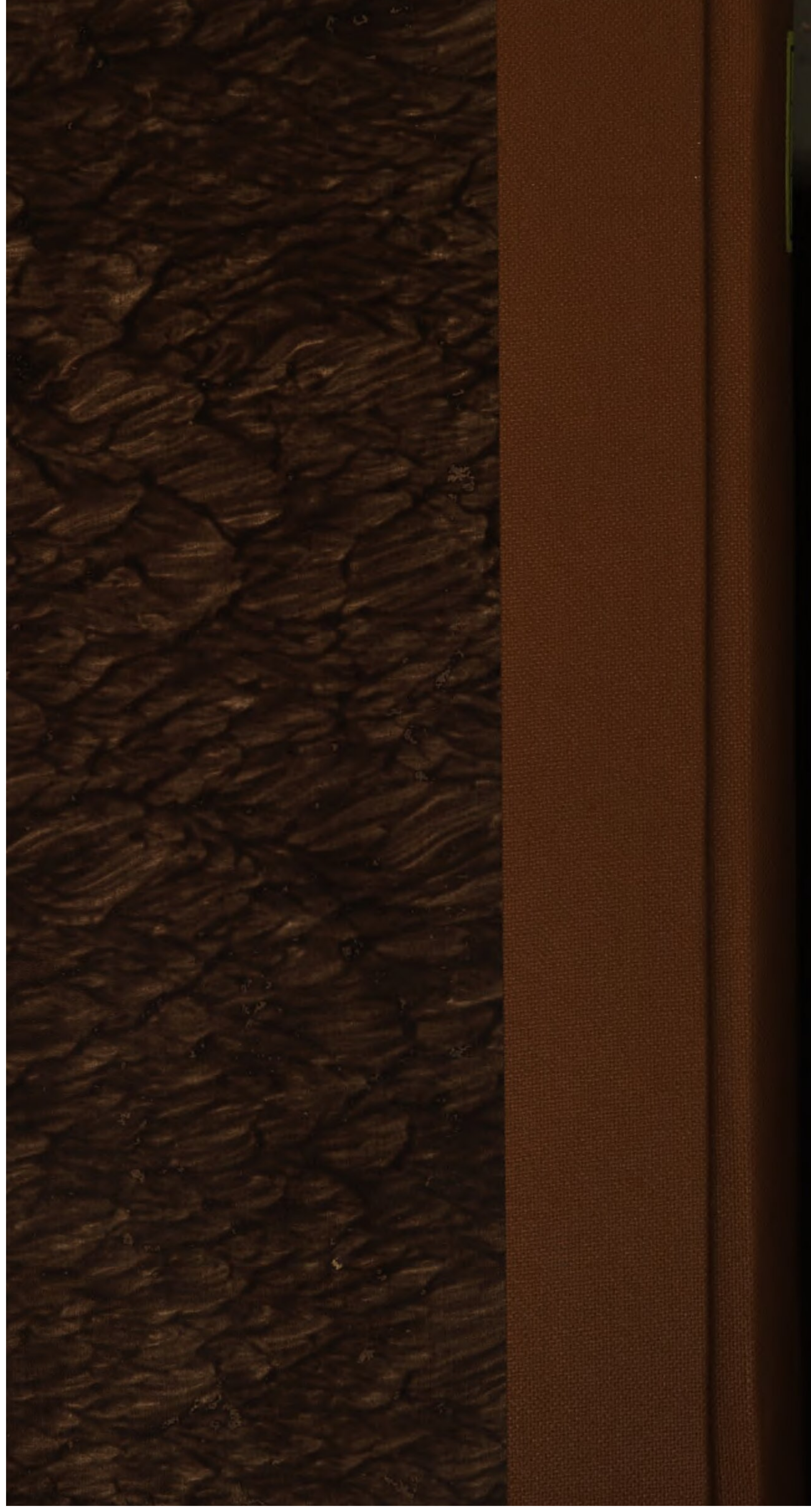
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